This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

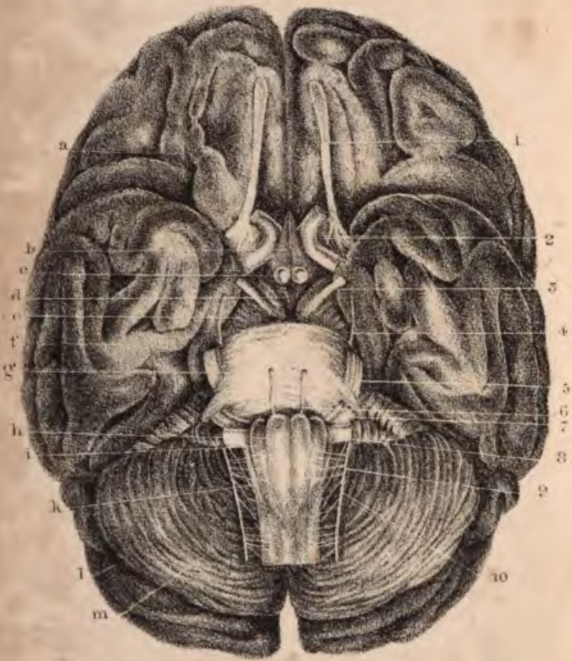
30.
321.

600006038N

Base of the Brain & Origin of the Cerebral Nerves.

1. 1st Pair
2. 2nd Pair
3. 3rd Pair
4. 4th Pair
5. 5th Pair
6. 6th Pair
7. 7th Pair
8. 8th Pair.
9. 9th Pair.
10. Accessory Nerve.

Vide Page 27.



a. *Anterior Cerebral Lobes.*
b. *Infundibulum.*
c. *Corpora Albicantia.*
d. *Locus perforatus or Pons Tarini.*
e. *Crura Cerebri.*
f. *Middle Cerebral Lobes.*
g. *Pons Varolii.*
h. *Corpora Pyramidalia.*
i. *Olivaria.*
k. *Restiformia.*
l. *Posterior Cerebral Lobes.*
m. *Cerebellum.*

Printed by Yeeé, 14 Earl St. Finsby Sqre

J.1830

A MANUAL

FOR

STUDENTS

WHO ARE

PREPARING FOR EXAMINATION

AT

APOTHECARIES' HALL.

BY JOHN STEGGALL, M.D., M.R.C.S.
&c.

FOURTH EDITION,
WITH CONSIDERABLE ADDITIONS AND IMPROVEMENTS.

LONDON:
PUBLISHED BY S. HIGHLEY, 174, FLEET STREET,
AND WEBB STREET, BOROUGH.

1830.

321.

J. AND C. ADLARD, PRINTERS,
BARTHOLOMEW CLOSE.

TO

JONATHAN PEREIRA, ESQ. F.L.S.

&c. &c.

LECTURER ON CHEMISTRY, MATERIA MEDICA,
AND MEDICAL BOTANY,

THIS PUBLICATION,

FOR THE USE OF STUDENTS PREPARING FOR EXAMINATION
AT APOTHECARIES' HALL,

IS DEDICATED,

BY HIS TRULY OBLIGED FRIEND,

JOHN STEGGALL.

5, *Smithfield Bars.*

CONTENTS.

Page
Regulations for Examination at Apothecaries' Hall . . . v.
Chemical Decompositions . . . 1
Animal Chemistry . . . 30
Toxicology 34
Toxicological Chemistry, or Tests for Poisons 41
Materia Medica 47
Tables of Materia Medica, containing the Botanical Classes and Orders . . 53
Table of Preparations of Opium, Antimony, Mercury, and Arsenic 104
Anatomy 106
Physiology 159
Cullen's Nosology . . . 173
Practice of Medicine . . . 185
Midwifery 226
Tables of Atomic Weights . . . 248
——— Pharmaceutical Equivalents . 270
Questions 282
Test Questions and Answers . . 324

APOTHECARIES' HALL.

Regulations to be observed by Students whose Attendance on Lectures commence before January 1st, 1829.

The Court of Examiners chosen and appointed by the master, wardens, and assistants, of the Society of Apothecaries, of the city of London, in pursuance of a certain Act of Parliament, "For better Regulating the Practice of Apothecaries throughout England and Wales," passed in the 55th year of the reign of his Majesty King George the Third, apprise all persons whom it may concern:

That every candidate for a certificate to practise as an apothecary will be required to possess a competent knowledge of the Latin language; and, in compliance with the 14th and 15th sections of the said Act, to produce testimonials of having served an apprenticeship of not less than five years to an apothecary, of having attained the full age of twenty-one years, and of good moral conduct.

Candidates will also be required to produce testimonials of attendance on lectures and medical practice, agreeably to regulations at different times published by the Court.

Those whose attendance on lectures commenced prior to the 1st of February, 1828, will be admitted to examination after an attendance on

One course of lectures on chemistry:

One course of lectures on materia medica:

Two courses of lectures on anatomy and physiology:

Two courses of lectures on the theory and practice of medicine:

And six months' physician's practice at a hospital, or nine months at a dispensary.

Those who began to attend lectures subsequently to the 1st of February, 1828, and previously to the 1st of October in the same year, will only be admitted to examination after the following course of study, viz. an attendance on

One course of lectures on chemistry:

One course of lectures on materia medica and botany:

Two courses of lectures on anatomy and physiology:

Two courses of lectures on the theory and practice of medicine: to be attended subsequently to the lectures on chemistry and materia medica, and to one course at least of anatomy:

And six months, at least, physician's practice at a hospital, or nine months at a dispensary; such attendance to commence subsequently to the termination of the first course of lectures on the principles and practice of medicine.

Those whose attendance on lectures commenced on or after the 1st of October, 1828, and previously to the 1st of January, 1829, will be required to produce testimonials of having attended

Two courses of lectures on chemistry:

Two courses of lectures on materia medica and botany:

Two courses of lectures on anatomy and physiology:

Two courses of anatomical demonstrations:

Two courses of lectures on the theory and practice of medicine: to be attended subsequently to one course of lectures on chemistry, materia medica, and anatomy:

And six months, at least, the physician's practice at a hospital (containing not less than sixty beds,) or nine months at a dispensary: such attendance to commence subsequently to the termination of the first course of lectures on the principles and practice of medicine.

Students are earnestly recommended in addition to the above-mentioned lectures to attend clinical lectures, and also lectures on midwifery and the diseases of women and children, on the latter of which subjects, as an important part of medical practice, they will be examined.

The examination of the candidate will be as follows:

1. In translating grammatically parts of the Pharmacopœia

Londinensis, and physicians' prescriptions; and after the 1st of January, 1831, candidates will be required to translate portions of the following medical Latin authors, viz. Celsus de Medicinâ, or Gregory Conspectus Medicinæ Theoreticæ.

2. In chemistry.
3. In materia medica.
4. In botany.
5. In anatomy and physiology.
6. In the practice of medicine.

Regulations to be observed by Students whose Attendance on Lectures commenced since January 1st, 1829.

That every candidate for a certificate to practise as an apothecary, will be required to possess a competent knowledge of the Latin language, and in compliance with the 14th and 15th sections of the said Act, to produce testimonials of having served an apprenticeship of not less than five years to an apothecary, of having attained the full age of twenty-one years, and of good moral conduct: and also testimonials of having attended

Two courses of lectures on chemistry:

Two courses of lectures on materia medica, therapeutics, and botany:

Two courses of lectures on anatomy and physiology:

Two courses of anatomical demonstrations:

Two courses of lectures on the theory and practice of medicine: to be attended subsequently to one course of lectures on chemistry, materia medica, and anatomy;

Two courses of lectures on midwifery and the diseases of women and children:

And nine months, at least, the physician's practice at a hospital (containing not less than sixty beds,) or twelve months at a dispensary: such attendance to commence subsequently to the termination of the first course of lectures on the principles and practice of medicine.

Students are, moreover, earnestly recommended to attend clinical lectures, and diligently to avail themselves of instruction in morbid anatomy and forensic medicine.

The examination of the candidate will be as follows:

1. In translating grammatically parts of the Pharmacopœia Londinensis, and physicians' prescriptions; and after the 1st of January, 1831, candidates will be required to translate portions of the following medical Latin authors, viz. Celsus de Medicinâ, or Gregory Conspectus Medicinæ Theoreticæ.
2. In chemistry.
3. In materia medica and therapeutics.
4. In botany.
5. In anatomy and physiology.
6. In the practice of medicine.

N.B. Physicians' pupils, who intend to present themselves for examination, must appear personally at the beadle's office, in this hall, and bring with them the tickets, authorizing their attendance on such practice, as the commencement thereof will be dated from the time of such personal appearance.

No testimonial of attendance on lectures on the principles and practice of medicine, delivered in London, or within seven miles thereof, will render a candidate eligible for examination, unless such lectures were given, and the testimonial is signed by, a fellow, candidate, or licentiate, of the Royal College of Physicians of London.

Notice.

Every person intending to qualify himself under these regulations, to practise as an apothecary, may obtain at the beadle's office at this Hall, (where attendance is given every day except Sunday, from nine until two o'clock,) a printed form of certificate of all the lectures candidates are required to attend, and also of the physician's practice. The court request the blanks may be filled up when signed by the respective lecturers and physicians, whose lectures or practice the student has attended.

Students are enjoined to observe, that in future, these certificates so filled up will be required from candidates for examination, and that no other form of testimonials of attendance on lectures and medical practice will be admitted; except such certificates as have heretofore been received, if the same were obtained prior to the 1st of February, 1828: or such as bear the seal of a university or college, and the signature of the officer attached to such university or college whose duty it is to sign certificates of attendance on the lectures given therein.

Every person offering himself for examination must give notice in writing, to the clerk of the society, on or before the Monday previously to the day of examination; and must also at the same time deposit all the required testimonials at the office of the beadle.

The Court will meet in the Hall every Thursday, where candidates are required to attend at half-past four o'clock.

By order of the Court,

JOHN WATSON, Secretary.

London; *September* 1, 1829.

For information relative to these regulations, medical students are referred to Mr. Watson, who may be seen at his residence, 43, Berners' street, between the hours of nine and ten o'clock every morning (Sunday excepted); and for information on all other subjects connected with the "Act for better regulating the Practice of Apothecaries," application is to be made to Mr. Edmund Bacot, clerk of the society, who attends at the Hall every Tuesday and Thursday from one to three o'clock.

It is expressly ordered by the Court of Examiners, that no gratuity be received by any officer from any person applying for information relative to the business of this Court.

ERRATA.

Page 108, line 15, for "*sack,*" read "*sac.*"
— 123, — 2, for "*cardiac,*" read "*cœliac.*"

MANUAL

FOR

APOTHECARIES' HALL.

CHEMICAL DECOMPOSITIONS, &c.

PREPARATIONS.

ACIDUM ACETICUM DILUTUM.

1. Composition of the dry acid:

$$\left.\begin{array}{ll}\text{4 prop. carbon} & 4 \times 6 = 24 \\ \text{3 prop. oxygen} & 3 \times 8 = 24 \\ \text{2 prop. hydrogen} & 2 \times 1 = 2\end{array}\right\} 50.$$

Composition of the crystallized or glacial acid:

1 prop. water, 59.

2. Vinegar is generally obtained, in this country, by exciting the acetous fermentation in malt liquors. The theory of its formation is not satisfactorily explained, but the most satisfactory one is the following: As alcohol is composed of a greater proportion of hydrogen and carbon than acetic acid, the oxygen of the atmosphere abstracts from the alcohol

sufficient carbon and hydrogen to form carbonic acid and water, so as to leave carbon, oxygen, and hydrogen, in the exact proportion for forming acetic acid. During fermentation, carbon is given out, which, by combining with the oxygen of the atmosphere, forms carbonic acid.

3. Common vinegar contains, besides acetic acid, *water*, *alcohol*, *colouring matter*, *mucilage*, *aroma*, *supertartrate of potash*, and, occasionally, some other impurities.

4. In distilling this acid, the first pint is rejected, because it contains water and alcohol, and the last is left in the retort, to prevent empyreuma.

ACIDUM BENZOICUM.

5. Composition:

$$\left.\begin{array}{rl} 15 \text{ carbon} & 15 \times 6 = 90 \\ 3 \text{ oxygen} & 3 \times 8 = 24 \\ 6 \text{ hydrogen} & 6 \times 1 = 6 \end{array}\right\} 120.$$

6. Benzoin is composed of *benzoic acid* and *resin*. By the application of a gentle heat, the benzoic acid is sublimed, together with some empyreumatic oil, produced by the decomposition of a portion of the resin. It is then pressed between folds of bibulous paper, to separate the oil, which discolours it, and again sublimed.

7. The term *balsam* is generally applied to such substances as contain benzoic acid, and resinous matter.

ACIDUM CITRICUM.

8. Composition of the crystallized acid:

$$\left.\begin{array}{ll} \text{4 oxygen} & 4 \times 8 = 32 \\ \text{4 carbon} & 4 \times 6 = 24 \\ \text{2 hydrogen} & 2 \times 1 = 2 \\ \text{2 water} & 2 \times 9 = 18 \end{array}\right\} 76.$$

9. Lemon juice is composed of *citric* acid, *water* and *mucilage*, chalk of *carbonic acid*, and *lime*. On the admixture of these, the citric acid combines with the lime, forming an insoluble citrate, whilst carbonic acid escapes. The citrate is then washed, to free it of the mucilage. When sulphuric acid is added, a sulphate of lime in formed, and precipitated, whilst the citric acids remains dissolved in the water. An excess of sulphuric acid is used to decompose any mucilage which may remain after washing.

ACIDUM MURIATICUM.

10. Composition of the dry acid:

$$\left.\begin{array}{ll} \text{1 Chlorine} & 36 \\ \text{1 Hydrogen} & 1 \end{array}\right\} 37.$$

11. Dried common salt is composed of *chlorine** and *sodium*, water of *oxygen* and *hydrogen*.

---

* *Chlorine* is a simple elementary body of a greenish yellow colour, capable of supporting combustion. It destroys colours, combines directly with metals, and, with hydrogen, forming muriatic acid gas. It unites with oxygen in four proportions, which are, a *protoxide* of chlorine, containing 1 proportion of oxygen; the *peroxide*, containing 4

On admixture, the oxygen of the water of the sulphuric acid combines with the sodium, forming soda, and this, uniting with sulphuric acid, constitutes a sulphate of soda. The chlorine of the salt unites with the hydrogen of the water, forming muriatic acid, in vapour, which is dissolved by the water in the receiver. It is requisite to use Woulfe's apparatus in this process.

ACIDUM NITRICUM.

12. Composition:

$$\left.\begin{array}{lr} \text{1 nitrogen*} & 14 \\ \text{5 oxygen } 8 \times 5 = & 40 \\ \text{2 water } 2 \times 9 = & 18 \end{array}\right\} 72.$$

13. During this process, sulphuric acid combines with the potash, forming bisulphate of potash, which remains in the retort, whilst the nitric acid rises, and is condensed in the receiver.

14. In making nitric acid, the great proportion of sulphuric acid is added, for three reasons:

---

oxygen; the *chloric acid,* composed of 1 chlorine and 5 oxygen; and *perchloric acid,* composed of 1 chlorine and 7 oxygen.

* *Nitrogen* combines with oxygen in 5 proportions, which are, *nitrous oxide,* composed of 1 nitrogen and 1 oxygen; this is commonly known as the laughing gas; it supports combustion, and is respirable for a short time, creating great excitement of the system; *nitric oxide,* or *nitrous gas,* contains 1 nitrogen and 2 oxygen; *hyponitrous acid* is composed of 1 nitrogen and 3 oxygen; *nitrous acid* contains 1 nitrogen and 4 oxygen; *nitric acid* is composed of 1 nitrogen and 5 oxygen.

1. To prevent the formation of nitrous acid. 2. To form a bisulphate of potash, which is more soluble, and easily removed from the retort. 3. To furnish the quantity of water necessary for producing liquid nitric acid.

ACIDUM SULPHURICUM DILUTUM.

15. Composition of dry sulphuric acid:

$$\left.\begin{array}{lr} \text{1 sulphur} & 16 \\ \text{3 oxygen} \quad 3 \times 8 = & 24 \end{array}\right\} 40.$$

Composition of the liquid acid:

Sp. gr. 1·850, 1 water, 49.

16. Sulphuric acid is obtained by burning a mixture of nitrate of potash and sulphur, in large chambers lined with lead. One portion of the sulphur combines with 2 proportions of oxygen of the air, forming sulphurous acid, which is disengaged; another portion of the sulphur decomposes the nitric acid of the potash, and, uniting with three proportions of its oxygen, forms sulphuric acid; this combining with the potash of the nitrate, forms sulphate of potash, which is left in the earthen pot. The nitrogen, and two proportions of the oxygen of the acid, form the nitric oxide, or nitrous gas, which, escaping into the air, abstracts from it two proportions of oxygen, and then becomes nitrous acid. Both the sulphurous and nitrous acids are absorbed by the water at the bottom of the chamber. 1 prop. of nitrous acid gives 2 oxygen to 2 sulphurous acid, converting it into sulphuric,

becoming itself nitric oxide, which, abstracting oxygen from the air, again forms nitrous acid. When the water is sufficiently acidulated, it is evaporated and boiled, and the sulphuric acid is left. The evolution of heat that takes place in mixing the acid with water, arises from their condensation.

ACIDUM TARTARICUM.

17. Composition of the crystallized acid:

5 oxygen	$5 \times 8 = 40$	75.
2 hydrogen	$2 \times 1 = 2$	
4 carbon	$4 \times 6 = 24$	
1 water	$9 = 9$	

18. By adding the carbonate of lime to the supertartrate of potash, an insoluble tartrate of lime is formed and precipitated, carbonic acid escapes, and a neutral tartrate of potash is left dissolved in the water. On the addition of sulphuric acid to the precipitate, a sulphate of lime is deposited, and tartaric acid remains in solution.

AMMONIÆ SUBCARBONAS.

19. Composition:

1 ammonia	17	59.
1½ carbonic acid	33	
1 water	9	

20. When muriate of ammonia and chalk are mixed together, a double decomposition takes place: the chlorine of the muriatic acid unites with the calcium, forming chloride of calcium;

its hydrogen combines with the oxygen of the lime to form water, which uniting with the disengaged ammonia and carbonic acid, form hydrated sesquicarbonate of ammonia.

21. A portion of the ammonia escaping during the process, leaves a preponderance of the acid.

LIQUOR AMMONIÆ.

22. Composition:

Ammonia and water.

23. The chlorine unites with the calcium, and the hydrogen with the oxygen of the lime, forming water, ammonia is set at liberty, and distilled, in a state of solution by the water.

24. Ammoniacal gas is formed during the above process, and is absorbed by the water, making the liquor ammoniæ. This gas is alkaline, extinguishes flame, and destroys animal life. It is rapidly absorbed by water.

25. Its composition is

$$\left.\begin{array}{lr} 1 \text{ nitrogen} & 14 \\ 3 \text{ hydrogen} \quad 3 \times 1 = & 3 \end{array}\right\} 17.$$

LIQUOR AMMONIÆ ACETATIS.

26. Composition of the dry acetate:

$$\left.\begin{array}{lr} 1 \text{ acetic acid} & 50 \\ 1 \text{ ammonia} & 17 \end{array}\right\} 67.$$

27. In this process, the acetic acid unites with the ammonia, forming acetate of ammonia, and carbonic acid escapes.

POTASSA CUM CALCE.

28. Composition:

Potash and lime.

29. It is merely a mechanical mixture.

LIQUOR POTASSÆ.

30. Composition:

Potash and Water.

31. Potash is a compound of *oxygen* and the metal *potassium*.*

32. The lime attracts the carbonic acid of the subcarbonate, and is precipitated, whilst the pure potash remains in solution.

---

* *Potassium* is a metal of a silvery appearance, soft at the ordinary atmospheric temperature, but hard and brittle if cooled down to 32° F. It was discovered by Sir Humphrey Davy, by means of the galvanic battery, and may be obtained in several ways: Gay Lussac and Thenard procured it by heating potash, in a gun-barrel, with iron filings, when the oxygen unites with the iron, potassium is sublimed, and collected in a cool part of the apparatus. It has a most powerful affinity for oxygen, and must be kept in a bottle hermetically sealed, or in substances which contain no oxygen, such as naphtha. It decomposes water so rapidly, that combustion takes place, pure potash is formed, and the hydrogen and a portion of potassium take fire. It combines with oxygen in two proportions, forming the protoxide and peroxide. The atomic number of potassium is 40.

POTASSA FUSA.

33. Composition:

1 potassium	40	57.
1 oxygen	8	
1 water	9	

34. In this process, water is expelled by evaporation, and the potash is reduced, by fusion, to a convenient shape.

POTASSÆ ACETAS.

35. Composition of dry acetic acid:

1 acetic acid	50	98.
1 potash	48	

36. The acetic acid unites with the potash, forming an acetate of potash, and the carbonic acid escapes.

POTASSÆ CARBONAS.

37. Composition:

2 carbonic acid	2 × 22	= 44	101.
1 Potash		= 48	
1 water		= 9	

38. By transmitting carbonic acid through a solution of subcarbonate of potash, the latter becomes fully saturated with the acid, forming a bicarbonate, but known in the pharmacopœia as carbonate of potash. This process must be conducted in Woulfe's apparatus.

POTASSÆ SUBCARBONAS.

39. Composition of the dry salt:

$$\left.\begin{array}{ll}1\ \text{potash} & 48\\ 1\ \text{carbonic acid} & 22\end{array}\right\}70.$$

40. The process in this preparation is intended to separate the greater part of foreign bodies, with which the impure potash may be mixed, and to reduce it to a state of dryness.

POTASSÆ SULPHAS.

41. Composition of the dry salt:

$$\left.\begin{array}{ll}1\ \text{potash} & 48\\ 1\ \text{sulphuric acid} & 40\end{array}\right\}88.$$

42. The salt which remains after the distillation of nitric acid, is a bisulphate of potash. The excess of acid is saturated by the subcarbonate, carbonic acid is evolved, and the result is a neutral sulphate of potash.

POTASSÆ TARTRAS.

43. Composition of the dry salt:

$$\left.\begin{array}{ll}1\ \text{potash} & 48\\ 1\ \text{tartaric acid} & 66\end{array}\right\}114.$$

44. The potash of the subcarbonate saturates the excess of acid in the supertartrate, carbonic acid escapes, and a neutral tartrate of potash is formed.

SODÆ CARBONAS.

45. Composition of the dry salt:

$$\left.\begin{array}{lr}1\text{ soda} & 32\\ 2\text{ carbonic acid}\quad 22\times 2 = & 44\end{array}\right\}76.$$

46. Soda is composed of *oxygen* and the metal *sodium*.*

47. The subcarbonate, by this process, is fully saturated with carbonic acid, forming what is denominated carbonate of soda. This salt loses part of its carbonic acid by exposure to the air, and is usually found composed of 1 bicarbonate and 1 carbonate, thus making it a sesquicarbonate of soda.

SODÆ SUBCARBONAS.

48. In this process, the foreign bodies contained in the common soda are removed, by filtration, evaporation, and crystallization.

SODÆ SUBCARBONAS EXSICCATA.

49. Composition:

$$\left.\begin{array}{lr}1\text{ carbonic acid} & 22\\ 1\text{ soda}\quad . & 32\end{array}\right\}54.$$

50. This process is only intended to expel a portion of the water of crystallization.

---

* Sodium is obtained in a similar manner to potassium. it is less fusible, and is heavier. When thrown into water, it oxidizes very rapidly, but no flame is evolved. Its atomic number is 24.

SODÆ SULPHAS.

51. Composition of the dry salt:

$$\left.\begin{array}{lr}\text{1 sulphuric acid} & 40\\ \text{1 soda} & 32\end{array}\right\}72.$$

It is usally combined with 10 proportions of water.

52. The excess of acid in the sulphate is saturated by the soda of the subcarbonate, a neutral sulphate is formed, and carbonic acid escapes.

SODA TARTARIZATA.

53. Composition:

$$\left.\begin{array}{lr}\text{1 tartrate of potash} & 114\\ \text{1 tartrate of soda} & 98\end{array}\right\}212.$$

54. The soda of the subcarbonate saturates the excess of acid in the supertartrate of potash, and a triple salt is formed of tartrate of potash and soda.

ALUMEN EXSICCATUM.

55. Crystallized alum is composed of

$$\left.\begin{array}{llr}\text{3 sulphate of alumina} & 3\times 58 = & 174\\ \text{1 ———— potash} & & 88\\ \text{25 water} & 9\times 25 = & 225\end{array}\right\}487.$$

56. In making alumen exsiccatum, the water of crystallization is driven off.

CALX.

57. Composition:

$$\left.\begin{array}{lr}\text{1 oxygen} & 8\\ \text{1 calcium} & 20\end{array}\right\}28.$$

58. The heat expels carbonic acid and water from the chalk.

MAGNESIA.

59. Composition:

$$\left.\begin{array}{lr}\text{1 oxygen} & 8\\ \text{1 magnesium} & 12\end{array}\right\}20.$$

60. The heat drives off the carbonic acid, and leaves the magnesia pure.

MAGNESIÆ SUBCARBONAS.

61. Composition:

Magnesia, carbonic acid, and water, or carbonate and hydrate of magnesia.

62. In this process, there is a double decomposition: the sulphuric acid unites with the potash, forming sulphate of potash in solution, and the carbonic combines with the magnesia, which is precipitated.

ANTIMONII SULPHURETUM PRÆCIPITATUM.

63. Composition:

Antimony* and sulphur.

64. Sulphuret of Antimony is a compound of sulphur and antimony.

65. When sulphuret of antimony, potash, and water, are boiled together, the sulphuret is dissolved by the potash, and water is decomposed; the oxygen of the water unites with the antimony, forming protoxide of antimony; its hydrogen combines with the sulphur, forming sulphuretted hydrogen. When sulphuric acid is added, it seizes upon the potash, making sulphate of potash, the protoxide and sulphuretted hydrogen are again resolved, by a mutual reaction of their elements, into protosulphuret of antimony and water.

The above is the explanation considered the most probable by Dr. Turner; but, according to this one, we cannot account for the evolution of sulphuretted hydrogen which always takes place in the preparation.

Berzelius and Thenard have paid particular attention to the subject; and the theory of formation of precipitated sulphuret of antimony, as given by Berzelius, appears to be the most correct. As it would much exceed our limits to enter into so long an explanation, the reader is referred to Thenard's Elements of Chemistry, article Hydrosulphurets. Thenard considers this preparation to be composed of protosulphuret and sesquisulphuret of antimony.

---

* Antimony combines with oxygen in three proportions, which are the protoxide, deutoxide, and peroxide. The first is the most active, the last two combine with salifiable bases, called antimonites and antimoniates. The atomic number of antimony is 44.

ANTIMONIUM TARTARIZATUM.

66. Composition :

1 tartrate of potash	114	284.
1 tartaric acid	66	
2 protoxide of antimony	52 × 2 = 104	

67. Glass of antimony is made by roasting the native sulphuret, by which an oxide of antimony and sulphurous acid are formed; the oxide is then vitrified with undecomposed ore, by exposure to a great heat. It generally contains a little silex.

68. When glass of antimony is boiled with supertartrate of potash, the excess of acid combines with the oxide of antimony, and the resulting salt is a tartrate of potash and antimony, in solution.

PULVIS ANTIMONIALIS.

69. Composition:

Protoxide of antimony and phosphate of lime.

70. The heat applied drives off the sulphur from the antimony, which attracts oxygen from

the atmosphere, and is converted into a protoxide of antimony. The hartshorn becomes a phosphate of lime, in consequence of the destruction of its gelatine.

71. The result is either a mechanical mixture of phosphate of lime and protoxide of antimony, or a subphosphate of lime and antimony.

ARGENTI NITRAS.

72. Composition:

$$\left.\begin{array}{ll}\text{1 nitric acid} & 54\\ \text{1 oxide of silver} & 118\end{array}\right\}172.$$

73. The nitric acid first oxidizes and then dissolves the silver, nitrous gas escaping. By fusion, part of the acid, together with the water, is expelled.

ARSENICUM ALBUM SUBLIMATUM.

74. Composition:

Oxygen and arsenicum.

75. By this process, the arsenious acid is separated from its impurities.

LIQUOR ARSENICALIS.

76. Composition of the arsenical preparation:

Arsenious acid and potash.

---

* The metal arsenicum combines with oxygen, in two proportions; arsenious acid contains 2 oxygen, the arsenic acid 3.

77. The oxide of arsenic combining with the potash, forms an arsenite of potash, which is dissolved by water, and coloured by spirits of lavender.

BISMUTHI SUBNITRAS.

78. Composition:

Oxide of bismuth and nitric acid.

79. The nitric acid oxidizes, and then combines with the bismuth, forming a nitrate of bismuth; nitrous gas being given out. On the addition of water, the subnitrate is precipitated.

CUPRUM AMMONIATUM.

80. Composition:

Peroxide of copper, ammonia, and sulphuric acid.

81. During trituration, part of the sulphuric acid contained in the sulphate of copper, unites with the ammonia, and thus sets free the carbonic acid. The result is either a triple compound of sulphate of copper and ammonia, or a mechanical mixture of subsulphate of copper, with sulphate of ammonia.

Copper combines with oxygen in two proportions:

The protoxide is composed of

$$\left.\begin{array}{lr}\text{1 copper} & 64\\ \text{1 oxygen} & 8\end{array}\right\} 72.$$

The peroxide is composed of—

$$\left.\begin{array}{lr}\text{1 copper} & 64\\ \text{2 oxygen} & 2 \times 8 = 16\end{array}\right\} 80.$$

FERRUM AMMONIATUM.

82. Composition:

Muriatic acid, peroxide of iron, and ammonia.

83. The muriatic acid unites with the iron, forming a muriate of iron, while the carbonic acid escapes. The muriate of iron volatilizes by heat, and more readily so with the muriate of ammonia, with which it unites. The result is either a triple compound of muriate of iron and ammonia, or a mixture of bichloride of iron with muriate of ammonia.

FERRI SUBCARBONAS.

84. Composition:

Peroxide of iron and carbonate of iron.

85. Here there is a double decomposition; the sulphuric acid unites with the soda, forming sulphate of soda, which remains in solution, while the carbonic acid unites with the protoxide of iron, forming with it carbonate of iron. Exposed to the air, the protoxide of iron contained in the carbonate attracts oxygen, forming peroxide of iron, and the carbonic acid is in great part evolved.

FERRI SULPHAS.

86. Composition of the crystallized salt

$$\left.\begin{array}{llr}\text{1 protoxide of iron} & & =36\\ \text{1 sulphuric acid} & & =40\\ \text{7 water} & 9\times7 & =63\end{array}\right\}139.$$

87. The iron becomes oxidized by the oxygen of the water, and is then dissolved by the acid; during the process, hydrogen gas escapes. Iron combines with two proportions of oxygen, forming the protoxide and peroxide.

FERRUM TARTARIZATUM.

88. Composition:

Tartaric acid, peroxide of iron, and potash.

89. The excess of acid in the supertartrate dissolves the iron which has been oxidized by the air and water, thus forming a tartrate of iron and potash.

LIQUOR FERRI ALKALINI.

90. Composition:

Peroxide of iron and carbonate of potash.

91. The iron is oxidized and dissolved by the nitric acid, forming pernitrate of iron; on adding the subcarbonate of potash, a double decomposition takes place: the peroxide of iron is first precipitated, but subsequently dissolved by the carbonate of potash, part of nitric acid is evolved, and part combines with a portion of the potash, forming nitrate of potash, in crystals, from which the liquor ferri alkalini is poured off.

TINCTURA FERRI MURIATIS.

92. Composition:

Peroxide of iron, muriatic acid, and spirit.

93. The muriatic acid forms with the iron, muriate of iron, which is dissolved in the spirit.

VINUM FERRI.

94. Composition:

Tartrate of iron and potash, with supertartrate of potash dissolved in spirit.

95. The excess of acid unites with the iron, and a tartrate of iron and potash is formed; the compound is dissolved by the spirit.

HYDRARGYRUM CUM CRETA.

96. Composition:

Suboxide of mercury* and chalk.

97. Part of the mercury is slightly oxidized by the trituration, and mechanically mixed with the chalk.

HYDRARGYRI NITRICO-OXYDUM.

98. Composition:

Peroxide of mercury and nitric acid.

99. The nitric acid first oxidizes, and then dissolves the mercury, forming nitrate of mer-

---

* Mercury is fluid at the ordinary temperature, and boils at 660°; it becomes solid at about 40° below zero. It combines with oxygen in two proportions: the protoxide contains 1 oxygen, its atomic number is 208; the peroxide has 2 oxygen, and its atomic number is 216.

cury, nitrous gas being given off. By heating it, part of the acid is expelled, and the result is a deutoxide of mercury, mixed with a little subnitrate.

HYDRARGYRI OXYDUM CINEREUM.

100. The chlorine of the calomel decomposes the water, and unites with its hydrogen to form muriatic acid, which with the lime, forms muriate of lime. The oxygen of the water oxidizes the mercury, which is precipitated.

HYDRARGYRI OXYDUM RUBRUM.

101. Composition:

$$\left.\begin{array}{llr} \text{1 mercury} & & 200 \\ \text{2 oxygen} & 8 \times 2 = & 16 \end{array}\right\} 216.$$

102. The mercury is oxidized by the oxygen of the atmosphere, assisted by heat.

HYDRARGYRI OXYMURIAS.

103. Composition:

$$\left.\begin{array}{llr} \text{2 chlorine} & 36 \times 2 = & 72 \\ \text{1 mercury} & 200 = & 200 \end{array}\right\} 272.$$

104. The sulphuric acid first oxidizes, and then unites with the mercury, forming a bipersulphate of mercury, sulphurous acid gas being given out; upon adding the common salt to the bipersulphate, the oxygen of the latter unites with the sodium, and forms soda, which com-

bines again with the sulphuric acid, and forms sulphate of soda; the chlorine of the salt unites with the mercury, and forms bichloride, or oxymuriate of mercury.

HYDRARGYRUM PRECIPITATUM ALBUM.

105. Composition:

$$\left.\begin{array}{lr}\text{1 peroxide of mercury} & =216\\ \text{1 muriate of ammonia} & =\ 54\end{array}\right\}270.$$

106. When corrosive sublimate and muriate of ammonia are mixed together, a triple salt is formed, called muriate of ammonia and mercury; by adding potash, a portion of muriate of potash is formed, carbonic acid escapes, and a submuriate of mercury and ammonia is precipitated.

HYDRARGYRUM PURIFICATUM.

107. By this process, mercury is separated from any foreign substances.

HYDRARGYRI SUBMURIAS.

108. Composition:

$$\left.\begin{array}{lr}\text{1 chlorine} & =\ 36\\ \text{1 mercury} & =200\end{array}\right\}236.$$

109. The sulphuric acid first oxidizes, and then unites with the mercury, forming a bipersulphate of mercury; the remaining portion of mercury is then added, and the result is a protosulphate of mercury; when this is rubbed

with common salt, the oxygen of the protosulphate unites with the sodium, and forms soda; this uniting with the sulphuric acid, forms sulphate of soda; the chlorine of the salt unites with the mercury, and forms chloride of mercury, or calomel. Mix it with a solution of muriate of ammonia, and wash it with water, to free it from any particle of the bichloride.

HYDRARGYRI SULPHURETUM NIGRUM.

110. Composition:

Protosulphuret of mercury and sulphur.

Mr. Brande considers it to be a bisulphuret with sulphur.

111. The mercury combines chemically with a portion of the sulphur, forming sulphuret of mercury, and this mechanically mixes with the remaining sulphur.

HYDRARGYRI SULPHURETUM RUBRUM.

112. Composition:

$$\left.\begin{array}{lr} \text{1 mercury} & = 200 \\ \text{2 sulphur} \quad 2 \times 16 & = 32 \end{array}\right\} 232.$$

113. The mercury combines with the sulphur, forming a deuto-sulphuret of mercury.

PLUMBI ACETAS.

114. Composition:

$$\left.\begin{array}{llr} \text{1 protoxide of lead*} & & =112 \\ \text{1 acetic acid} & & =50 \\ \text{3 water} & 3\times 9 & =27 \end{array}\right\}189.$$

115. The acetic acid combines with the oxide of lead, and the carbonic escapes.

LIQUOR PLUMBI SUBACETATIS.

116. The acetic acid combines with the oxide of lead, and forms with it an uncrystallizable subacetate, composed of 2 protoxide of lead, and 1 acetic acid.

ZINCI OXYDUM.

117. Composition:

$$\left.\begin{array}{lr} \text{1 zinc} & =34 \\ \text{1 oxygen} & =8 \end{array}\right\}42.$$

---

* Lead combines with oxygen in three proportions: the protoxide, named massicot and litharge, contained in all the salts of lead, is composed of

$$\left.\begin{array}{lr} \text{1 lead} & =104 \\ \text{1 oxygen} & =8 \end{array}\right\}112.$$

The deutoxide, or red lead,

$$\left.\begin{array}{lr} \text{1 lead} & =104 \\ 1\tfrac{1}{2}\ \text{oxygen} & =12 \end{array}\right\}116.$$

The peroxide,

$$\left.\begin{array}{llr} \text{1 lead} & & =104 \\ \text{2 oxygen} & 2\times 8 & =16 \end{array}\right\}120.$$

118. On adding the ammonia to the sulphate of zinc, the ammonia unites with the sulphuric acid, and oxide of zinc is precipitated. This is the only oxide of zinc.

ZINCI SULPHAS.

119. Composition:

$$\left.\begin{array}{llr} \text{1 oxide of zinc} & & 42 \\ \text{1 sulphuric acid} & & 40 \\ \text{6 water} & 6 \times 9 = & 54 \end{array}\right\} 136.$$

120. In this process part of the water is decomposed: its oxygen unites with the zinc, forming an oxide, which is dissolved by the sulphuric acid, making sulphate of zinc, and the hydrogen of the water escapes.

POTASSÆ SULPHURETUM.

121. Composition:

Bisulphuret of potassium, sulphate of potash and sulphur.

122. When sulphur and subcarbonate of potash are heated together, the carbonic acid is expelled, and three fourths of the potash are decomposed, the oxygen of which, uniting with a portion of the sulphur, forms sulphuric acid, and this combining with the undecomposed fourth of the potash, forms sulphate of potash. The potassium of the decomposed potash unites with some sulphur, making a sulphuret of potassium, thus leaving a residue of sulphate of

potash, bisulphuret of potassium, and some sulphur.

SULPHUR PRÆCIPITATUM.

123. Composition:

Sulphur and water.*

124. When sulphur, lime, and water, are boiled together, a mutual decomposition takes place. One proportion of the sulphur combines with the hydrogen of the water, forming bisulphuretted hydrogen; and this uniting with a portion of the lime, forms hydroguretted sulphuret of lime in solution; another portion of the sulphur combines with oxygen, forming hyposulphurous acid, and this uniting with a second portion of lime, forms hyposulphite of lime in solution, the third portion of lime combining likewise with oxygen, forms sulphurous acid; and this, with a third portion of lime which is precipitated, forms sulphite of lime. When muriatic acid is dropt into the solution, it combines with the lime, forming muriate of

---

* Sulphur combines with oxygen in four proportions. 1. *Hyposulphurous acid contains* 2 *sulphur and* 1 *oxygen.* 2. *Sulphurous acid* contains 1 sulphur and 2 oxygen. This acid uniting with bases, form the class of salts called sulphites. 3. *Hyposulphuric acid* is composed of 2 sulphur and 5 oxygen. 4. *Sulphuric acid* contains 1 sulphur and 3 oxygen. It combines with various bases, forming the salts named sulphates.

lime, the oxygen of the hyposulphite unites with a portion of the hydrogen forming water, sulphuretted hydrogen is evolved, and the sulphur is precipitated.

MISTURA FERRI COMPOSITA.

125. In this mixture, the sulphuric acid unites with the potash, forming sulphate of potash, and the carbonic acid with the iron, making a carbonate of iron, which is suspended in the mixture by the myrrh.

ALCOHOL.

126. Composition:

$$\left.\begin{array}{ll} \text{2 carbon} & 6 \times 2 = 12 \\ \text{1 oxygen} & = 8 \\ \text{3 hydrogen} & 3 \times 1 = 3 \end{array}\right\} 23.$$

127. Alcohol is obtained from sugar by the vinous fermentation. By this process the sugar loses carbon and oxygen in the proportions for forming carbonic acid, and is resolved into alcohol, as may be seen by the following diagram:

	hydrogen.	oxygen.	carbon.
Sugar contains	3	3	3
Subtract 1 proportion of carbonic acid,		2	1
The result will be, 1 proportion of alcohol,	3	1	2

128. In purifying rectified spirit, the subcarbonate of potash attracts the water, and prevents its rising during distillation.

SPIRITUS AMMONIÆ.

129. There is a double decomposition in this preparation. Muriate of ammonia and subcarbonate of potash are decomposed. The chlorine of the muriatic acid unites with the potassium, forming chloride of potassium, which is left in the retort. The carbonic acid unites with the ammonia, forming carbonate of ammonia, which rises and combines with the water produced by the hydrogen of the muriatic acid, and oxygen of the potash.

ÆTHER SULPHURICUS.

130. Composition:

Hydrogen, oxygen, and carbon.

131. In this process the æther which passes over, depends upon a new arrangement of the elements of alcohol, occasioned by the presence of sulphuric acid, and a certain temperature. The formation of æther may be explained by the following diagram:

	hydrogen.	oxygen.	carbon.
Two proportions of alcohol consist of	6	2	4
The sulphuric acid separates 1 proportion of water resulting from decomposition of the alcohol	1	1	
Leaving 1 proportion of æther composed of	5	1	4
Subtract from æther 1 proportion of water	1	1	
The result will be, 2 proportions of olefiant gas	4	0	4

ÆTHER RECTIFICATUS.

132. Sulphuric æther contains some sulphuric acid and ætherial oil; the potash saturates the acid and forms a soap with the oil; on the addition of a gentle heat, the æther is separated from these impurities and condenses in the receiver.

WATER.

133. Composition:

$$\left.\begin{array}{ll}1\text{ oxygen} & =8\\ 1\text{ hydrogen} & =1\end{array}\right\}9.$$

ATMOSPHERIC AIR.

134. Composition:

Oxygen twenty-one parts, azote seventy-nine parts by weight.

It contains also a variable proportion of aqueous vapour and carbonic acid.

ANIMAL CHEMISTRY.

1. The component principles of animal matter, are oxygen, hydrogen, carbon, and nitrogen; besides these four elementary bodies which are the main ingredients, other substances are combined in various proportions; they are sulphur, phosphorus, iron, lime, soda, and potash. The compounds formed of these principles, which enter in different proportions into the different parts, are the following:

Gelatine.
Albumen.
Mucus.
Fibrin.
Urea.
Resin.
Sugar.
Oil.
Acids.

COMPLEX ANIMAL PRODUCTS.

2. Blood, when first drawn from an animal, appears to be an homogeneous fluid, but if allowed to rest a short time, a separation of its component parts takes place.

3. The serum or thin transparent part is composed, according to Berzelius, of

Water.
Albumen.
Muriate of potash and soda.
Lactate of soda and animal matter.
Carbonate and phosphate of soda.

4. The coagulum or crassamentum, is composed of

Fibrin.
Albumen.
Colouring matter, containing salt, combined with iron.

5. Human bile is composed of

Water.
Albumen.
Resin.
Picromel.
Yellow matter.
Several neutral salts of soda.
Phosphate of lime and oxide of iron.

6. Biliary calculi consist chiefly of *adipocire*, with a quantity of colouring matter, or, according to Chevreul, of yellow colouring matter, and a peculiar principle denominated cholesterine.

7. The chief component parts of bone, are

Animal matter.
Phosphate and carbonate of lime.
Phosphate of magnesia.
Fluate of lime and water.

8. The brain is composed of

Water.
White fatty matter.
Red fatty matter.
Albumen.
Osmazome.
Phosphorus.
Acids, salts, and sulphur.

9. Chyle is composed of

Water.
Fibrin.
Albumen, and some salts.

10. Concretions found in the pineal, salivary, pulmonary, and prostate glands, consist chiefly of

Phosphate and carbonate of lime.

11. Chalk stones, or gouty concretions, are composed of

Uric acid, and soda.

12. Gastric juice has not been accurately analysed, from the impossibility of obtaining it unmixed with other fluids.

13. Humours of the eye consist of

Water.
Albumen.
Gelatine.
Several neutral salts.

14. Ligaments and membranes are composed chiefly of

Coagulated albumen and gelatine.

15. Milk is composed of

Water.
Cheese.
Sugar of milk.
Muriate, phosphate, and
Lactate of potash.
Lactate of iron.
Earthy phosphates.

16. Mucus of the nose is composed of

Water.
Mucous matter.
Salts of potash and soda.
Albumen and animal matter.

17. Muscle consists principally of

Fibrin.
Some gelatine.
Osmazome.
Albumen, and neutral salts.
Soda.
Lime, and ammonia.

18. Nails are composed of

Coagulated albumen, and a quantity of gelatine, and a small quantity of earthy matter.

19. Pancreatic juice is considered analogous in its component parts to the saliva.

20. Saliva is composed of

Water.
Albumen.
Mucus.
Saline substances.
And a small quantity of animal matter.

21. Synovia is composed of

Fibrous matter.
Albumen.
Salts of soda, and lime.
Water.

22. Tears are composed of

Water.
Albumen.
Mucus.
Various neutral salts.

23. The substance of the teeth is composed of

Phosphate of lime.
Carbonate of lime.
Cartilage.
The enamel is free from cartilage, and contains gelatine.

24. Tendons contain no fibrin, and are composed principally of

Gelatine and membranes.

25. Urine is composed of

Water.
Urea, or nephrin.
Sulphate of potash and soda.
Phosphate of soda and ammonia.
Muriate of soda and ammonia.
Lactic acid.
Uric acid, or lithic acid.
Lactate of ammonia.
Animal matter, soluble in alcohol.
Earthy phosphates.
Mucus of the bladder.
Silica.

26. Urinary calculi are arranged under six heads, by Mr. Henry; but Dr. Wollaston limits them to four; they are,

1. Uric calculi, which consist principally of uric acid.
2. Fusible calculi, composed principally of phosphate of lime, and phosphate of lime and ammonia.
3. Mulberry calculi, composed of

Oxalate of lime, or of oxalate and phosphate of lime.

4. Bone earth calculi, consist principally of phosphate of lime.

To these might be added a distinct variety,

The cystic oxide.

TOXICOLOGY.

1. Toxicology treats of the nature, antidotes, modus operandi, and tests of poisons.

2. Poisons are those substances which, being applied in some way to the human body, are capable of destroying the action of the vital functions, or of placing the solids and fluids in a situation that prevents the continuance of life.

3. Poisons are usually arranged into classes, which, for practical purposes, may be restricted to five; they are, the *corrosive, acrid, narcotic, astringent,* and *septic poisons.*

CORROSIVE POISONS.

4. *Corrosive poisons* are principally metallic, and act by irritating, inflaming, or corroding the textures with which they come in contact.

5. The principal *corrosive* poisons, are preparations of *arsenic, mercury, silver, antimony, copper, barytes, tin, zinc,* and many *acids* and *alkalies, caustic alkaline earths, phosphorus* and *iodine.*

6. *Symptoms* of a *corrosive* or *acrid poison.* Heat, irritation, and dryness about the mouth

and œsophagus, with sensation of constriction: obstinate vomiting, sometimes of blood, great pain in the stomach and bowels, with thirst; copious evacuations by vomit and stool, with tenesmus: a sensation of constriction about the diaphragm, and a difficulty of breathing: pain in the kidnies and strangury, convulsions, cramps in the hands, trembling of the lips, syncope, cold sweats, pulse small, chorded, and irregular. Sometimes purple spots, or a miliary eruption, shew themselves, gangrene advances, the countenance becomes cadaverous, there is insensibility, and death soon follows.

7. In detailing the symptoms of any class of poisons, it cannot be supposed that they follow in any invariably precise order, or to be all evident in any single case. But, as the effects of all corrosive poisons are very similar, it will be unnecessary to recapitulate more than is considered peculiar to any individual poison.

8. *Corrosive sublimate* is said to be distinguished by the profuse salivation, the mercurial fœtor, swelling of the salivary glands, and diminished secretion of urine; these diagnostic characters cannot be depended upon in practice, and will be found generally fallacious.

9. The preparations of *copper* are distinguished by the coppery taste in the mouth, and the severe griping pains in the bowels.

10. *Mineral acids* are distinguished by the destruction of the soft parts of the mouth: the matter vomited is black, and effervesces if dropt

upon the hearth. The intellect is generally very little impaired. *Nitric acid* may be known, by giving out a smell of nitrous gas, and by the yellow stains on the lips.

11. *Potash, soda,* and *ammonia,* are distinguishable by the urinous and acrid taste: the vomited matter feels soapy, and commonly effervesces with acids.

12. *Ammonia* may be known by the pungent smell it gives out.

13. *Treatment* for *corrosive poisons.* The general treatment consists in evacuating the stomach by emetics, such as the sulphate of zinc or copper; and, if excited, by administering large draughts of tepid mucilaginous fluids to assist the vomiting. Sugar and water, or linseed-tea or gruel, are the best for the purpose. Castor oil should be given, and the inflammatory symptoms are subsequently to be combated on general principles.

14. At the same time that the above treatment is adopted, *antidotes,* those substances which decompose the poison, and render it comparatively inert, should be administered. The antidotes are few, amongst them are the following:

15. *Lime-water* is the only antidote for *arsenic,* if taken in a fluid state; but, even on that, little reliance can be placed.

16. *Whites of eggs* should be administered to combat *corrosive sublimate,* converting it into calomel.

17. Decoction of yellow cinchona bark, galls, or tea, should be given for *tartar emetic*.

18. *Copper* requires the administration of white of eggs, sugar, and coffee.

19. *Barytes*, and its salts, must be met with sulphate of magnesia or soda.

20. Muriate of soda must be given for poisoning by *lunar caustic*.

21. *Magnesia* is the best antidote for *acids:* if not at hand, whiting and soapsuds may be given. If strong sulphuric acid has been taken, as little water as possible should be given, and a preference should be given to chalk and water.

22. *Acids* may be given as the antidotes to *alkalies*. The best are vinegar and the juice of lemons.

23. The *stomach pump*, if at hand, may generally be used, with great care in its introduction, through parts already irritated, inflamed, or corroded.

ACRID POISONS.

24. The principal acrid poisons are: *veratrum album*, *helleborus niger* and *fœtidus*, *elaterium*, *colocynth*, *gamboge*, *mezereon*, *emphorbium*, *savine*, *colchicum*, *scammony*, *cantharides*, *aconitum napellus*, *stavesacre*, *squill*, &c.

25. The *symptoms* are very similar to those produced by corrosive poisons. There is generally violent vomiting and purging, pain in the stomach and intestines, quick breathing and

vertigo, syncope, sinking of the pulse, cold sweats, convulsions, paralysis, and death.

26. *Treatment.* Assist the vomiting, if commenced, by mucilaginous drinks: if not excited, give from five to ten grains of sulphate of copper, or a scruple of sulphate of zinc. After the poison is evacuated, give coffee, acids, and camphor, according to circumstances, and combat the inflammation in the usual manner.

NARCOTIC POISONS.

27. The principal narcotic poisons are: *opium, henbane, hemlock, camphor, solanum dulcamara, belladonna, digitalis, prussic acid, laurel-water, tobacco, stramonium,* &c.

Some of the above produce symptoms partaking of the character of narcotic and acrid poisons; but, if separately considered, require a more extended classification.

28. *Symptoms.* The symptoms of narcotic poisons, and of opium in particular, are: stupor, drowsiness, insensibility, and immobility, respiration scarcely perceptible, pulse small and feeble, but sometimes full and slow; as the effects increase, the lethargic state becomes more profound; swallowing is suspended; the breathing sometimes is stertorous; the pupil is dilated and insensible to light; countenance pale and cadaverous: the muscles of the limbs and trunk are relaxed; sometimes there is vomiting, but the coma soon returns, and death,

which is occasionally preceded by convulsions, soon follows.

29. *Treatment.* Administer a powerful emetic, assisted by copious mucilaginous drinks. If the stomach pump be at hand, inject plenty of gruel into the stomach, and endeavour to draw off the poison. After the poison has been satisfactorily evacuated, give coffee, vinegar and water, brandy, or cordials. The patient should be sedulously kept awake till the symptoms have subsided. Coffee and brandy are better for opium, and brandy and ammonia are the best remedies for digitalis. Orfila considers the best antidotes to prussic acid to be, inhalation of the vapour of ammonia, or of a weak solution of chlorine, and cold affusion over the head and along the back.

ASTRINGENT POISONS.

30. Astringent poisons are confined to the preparations of *lead*.

31. *Symptoms.* An astringent metallic sugary taste; constriction of the throat; pain in the region of the stomach; obstinate, painful, and often bloody vomitings; violent cholic; pulse small and hard; laborious breathing; tremors, terminating occasionally in hiccup, convulsions, paralysis, and death. Lead taken in small continued doses produces colica pictonum, and paralytic symptoms.

32. *Treatment.* Administer sulphate of mag-

nesia or soda; subsequently castor oil, and diluents; bleed, if the pulse be hard.

SEPTIC POISONS.

33. Under the head septic poisons, are included those of poisonous serpents, insects, and fishes.

POISONOUS SERPENTS AND INSECTS,

As, the Viper, Rattle-Snake, Scorpion, &c.

34. *Symptoms.* A sharp pain in the wounded part, which soon extends over the limbs or body; great swelling at first, hard, and pale; then reddish, livid, and gangrenous in appearance; faintings, vomitings, convulsions, and sometimes jaundice; pulse small, frequent, and irregular; breathing difficult; cold perspiration; the sight fails, and the intellectual faculties become deranged. Inflammation and gangrene often supervene, and death soon follows.

35. *Treatment.* Apply a ligature moderately tightened above the bitten part; allow the wound to bleed, after bathing and fomenting it well with warm water; apply freely to the wound the actual cautery, lunar caustic, or the butter of antimony; afterwards cover it with lint dipped in olive oil and hartshorn. Give warm diluting drinks, with ammonia; occasionally a little wine; and let the patients be well covered in bed, to induce perspiration.

Should gangrene threaten, wine and bark may be given more liberally.

POISONOUS FISH,

Such as, the Dolphin, Conger Eel, Muscles, Yellow-billed Sprat, Sea-Lobster, &c.

Symptoms. Sense of weight at the stomach, nausea, vertigo, headach, and heat about the head and eyes; colicky pains, thirst, and often unticaria. Death has taken place in some cases.

37. *Treatment.* Administer an emetic of sulphate of zinc, with large draughts of warm water, then a cathartic, and anodynes; if there be excessive vomitings or spasms afterwards, give vinegar and water, æther, and ammonia.

TOXICOLOGICAL CHEMISTRY,

OR, TESTS FOR THE PRINCIPAL POISONS.

ARSENIC.

38. The following are the tests for arsenic:

Ammoniacal sulphate of copper, added to a solution of arsenic, produces a green precipitate of arsenite of copper, called Scheele's green.

Ammoniacal nitrate of silver, added to a solution of arsenic, produces a lemon yellow precipitate of the arsenite of silver, leaving nitrate of ammonia in solution.

Sulphuretted hydrogen, added to a solution of arsenic, produces a golden-yellow precipitate of sulphuret of arsenicum, or orpimint. This precipitate may then be heated with black flux, and the arsenious acid will be sublimed, and give out the alliacious odour, if it be converted into vapour. This is the most certain test for arsenic.

Lime-water, added to a solution of arsenic, produces a white precipitate of arsenite of lime.

When arsenic in substance is thrown on burning coal, it evaporates with a white smoke, and a smell resembling garlic.

Mixed with potash and charcoal, and heated in a glass tube, it sublimes and forms a brilliant metallic coating on the sides of the tube.

CORROSIVE SUBLIMATE.

39. The following are the best tests for corrosive sublimate:

Solution of potash, added to corrosive sublimate, produces a yellow precipitate.

Lime-water, added to corrosive sublimate, produces an orange precipitate.

Ammonia, added to corrosive sublimate, produces a white precipitate.

Albumen, added to corrosive sublimate, produces a white precipitate of calomel and albumen.

Heated in a glass tube with carbonate of potash, globules of mercury are obtained.

Galvanism. Drop a small quantity of the solution on a piece of gold, and bring into contact a key, or some piece of iron, so as to form a galvanic circle. If sublimate be present the gold will be whitened.

PREPARATIONS OF COPPER.

40. The tests for the preparations of copper are the following:

Ammonia, which produces a blue precipitate of ammoniated copper.

Ferro-prussiate of potash, produces a reddish brown precipitate.

Sulphuretted hydrogen gives a black precipitate of sulphuret of copper.

Gallic acid produces a brown precipitate.

A clean plate of iron, plunged into a solution of copper, will in a few hours have a coating of copper.

Heated in a crucible with charcoal, metallic copper will be obtained.

TARTAR EMETIC.

41. The tests for tartar emetic are the following:

Hydro-sulphuret of potash, which produces an orange precipitate.

Gallic acid or infusion of galls, which produce a whitish yellow precipitate.

Sulphuric acid, which produces a white precipitate.

THE ACIDS.

42. The acids may be distinguished from other substances, by the following tests: they convert most vegetable blues into red; they have a sour taste; the addition of an alkali destroys these properties.

43. The following are the acids most commonly used for poisoning: sulphuric, muriatic, nitric, oxalic, and prussic acids.

44. The tests for sulphuric acid are:

Muriate of barytes, which produces a white precipitate.

Nitrate of lead, which produces a white precipitate.

45. The tests for muriatic acid are:

Nitrate of silver, which produces a copious white precipitate, soluble in ammonia, but insoluble in nitric acid.

46. Nitric acid may be known by the escape of nitrous gas when boiled upon copper.

47. The best test for oxalic acid is:

Muriate lime, which produces a white precipitate, insoluble in nitric acid.

48. The tests for the prussic acid are:

Its odour, that of bitter almonds.

If potash be added, and then a solution of sulphate of iron, a precipitate is produced. If to this, dilute sulphuric acid is added, a precipitate of a bluish green colour is produced.

Nitrate of silver which forms a cyanuret of silver.

LEAD.

The tests for lead are:

Hydro-sulphuret of potash, which produces a black precipitate.

Ferro prussiate of potash, which produces a white precipitate.

Infusion of galls, which produces a white precipitate of gallate of lead.

Sulphuric acid, or any soluble sulphate, which produces a white precipitate.

SULPHATE OF ZINC.

50. The tests for the sulphate of zinc are:

Ferro-prussiate of potash, which produces a white precipitate.

The hydro-sulphurets, which produce a white precipitate.

Alkalies, which produce a white precipitate.

Infusion of galls, producing no precipitate.

NITRATE OF SILVER.

51. The tests for nitrate of silver are the following:

Muriatic acid, and the soluble muriates, produce a white precipitate.

Arsenite of potash produces a yellow precipitate of arsenite of silver.

Phosphate of soda produces a yellow precipitate.

The solution stains the skin black.

IODINE.

52. The tests for iodine are the following:

It stains the skin brown.

It destroys vegetable colours like chlorine.

Heated in a tube it is converted into a violet coloured gas.

A solution of starch added to it produces a blue colour.

THE ALKALIES.

53. The solutions of alkalies feel soapy to the touch; they change most vegetable reds and blues to green, and yellows to brown, and remain transparent when carbonic acid is added to them, which distinguishes them from the alkaline earths.

54. Potash may be distinguished from soda by the following tests:

Tartaric acid, or muriate of platinum, added to potash, produce precipitates of supertartrate of potash, and chloride of platinum and potash; but, with soda, they produce no precipitate.

55. Ammonia is readily known by its pungent odour.

THE ALKALINE EARTHS.

56. Lime may be detected by,

Oxalate of ammonia, which causes a white precipitate.

Carbonic acid, which causes a white precipitate.

57. Barytes may be known by,

The sulphuric acid and all the salphates producing a white precipitate insoluble in nitric acid.

NITRATE OF POTASH.

58. The nitrate of potash may be distinguished, by its crackling and producing a white flame when thrown on burning coals. Sulphuric acid added to it produces white vapours.

MURIATE OF AMMONIA.

59. The tests for muriate of ammonia are,

Quicklime rubbed with it, which causes an ammoniacal odour.

Nitrate of silver added to a solution of this salt causes a white precipitate.

OF THE DETECTION OF THE VEGETABLE POISONS.

Opium is known by the persalts of iron throwing down a precipitate of a blood-red colour.—*(The tests for the oxalic and prussic acids are inserted along with the mineral acids.)*

MATERIA MEDICA.

ALTERATIVES,

1. Are medicines, which change the functions of the body, and restore them to a healthy state, without producing any sensible evacuation.

2. The principal alteratives are ***mercurial*** and *antimonial* preparations, in small doses; ***sarsaparilla***, *guaiacum*, and *mezereon*.

ANTACIDS OR ABSORBENTS,

3. Counteract and neutralize acidity in the stomach and intestinal canal, by their chemical action.

4. The principal antacids are *chalk*, *magnesia*, *potash*, *soda*, and *ammonia*.

ANTHELMINTICS OR VERMIFUGES,

5. Are medicines, which assist in the expulsion of worms, either by dislodging or destroying them.

6. The anthelmintics, which act by exciting copious evacuations, are *calomel*, *scammony*, *gamboge*, and *spirits of turpentine*.

7. Mechanical anthelmintics, are principally *dolichos pruriens*, *iron filings*, powdered *tin*, *male fern-root*, and *carbonate of iron*.

ANTISEPTICS,

8. Are remedies supposed to be capable of resisting putrefaction.

9. The principal accredited antiseptics are, vegetable and mineral *acids*, *cinchona*, *camphor*, *myrrh*, and *opium*.

ANTISPASMODICS,

10. Are remedies supposed to have a specific effect in subduing that muscular contraction called spasm.

11. The principal are *assafœtida*, *castor*, *opium*, *musk*, *galbanum*, *valerian*, *camphor*, and *æther*.

APERIENTS,

12. Are mild cathartics.—*Vide Cathartics.*

ASTRINGENTS,

13. Are remedies which produce a constricted or contracted state of the fibres in various parts of the system.

14. The principal astringents are *sulphuric acid*, *alum*, *sulphate* of *copper*, preparations of *silver*, *iron*, *zinc*, and *lead*; *oak bark*, *galls*, *tormentilla*, *bistort*, *logwood*, *catechu*, *kino*, and *pomegranate*.

CARMINATIVES,

15. Are those stimulant remedies which act, by dispersing and preventing gaseous collections.

16. The principal are *oil of cinnamon, caraway, peppermint, aniseed,* and essential oils in general.

CATHARTICS,

17. Are those medicines which produce an increase of alvine evacuations.

18. The gentle cathartics, called aperients, or laxatives, are *manna, cassia fistula, tamarinds, castor oil,* and *magnesia.*

19. The more powerful cathartics are *senna, rhubarb, aloes, jalap, scammony, gamboge, colocynth, elaterium, calomel,* and *croton oil.*

DEMULCENTS,

20. Are remedies of an oily or mucilaginous nature, which protect the intestines, by their viscidity, from acrid substances.

DIAPHORETICS,

21. Increase the determination of perspiratory fluid to the skin.

22. The principal are: *acetate* of *ammonia, opium, camphor, guaiacum, mezereon, sassafras,* and *sulphur.*

DILUENTS,

23. Are those bland fluids, which tend to increase the proportion of fluid in the blood.

DIURETICS,

24. Are medicines which excite an increased discharge of urine.

25. The principal are *acetate*, *supertartrate*, and *nitrate* of *potash*, *nitric æther*, *squills*, *spirits* of *turpentine*, *copaiva*, *digitalis*, *tobacco*, *mercury*, *cantharides*, and *colchicum*.

EMETICS,

26. Are those medicines which, being received into the stomach, excite the action of vomiting.

27. The principal are *tartarized antimony*, *sulphate of zinc*, *sulphate of copper*, *ipecacuanha*, *squills*, *tobacco*, *mustard*, and *chamomile*.

EMMENAGOGUES,

28. Are those substances which tend to excite the menstrual discharge. Some act on the system, generally by diminishing undue arterial action; others excite the torpid action of the uterine vessels, by a sympathetic effect, produced by purgatives, which stimulate the rectum.

29. The principal emmenagogues in common use, are *aloes*, *hellebore*, *assafœtida*, *galbanum*, various preparations of *iron*, *mustard*, *savine*, *rue*, and *madder*.

EMOLLIENTS,

30 Are those substances which, applied externally, relax and soften the animal fibre.

31. The principal emollients are, unctuous substances and liniments, with warmth and moisture.

ERRHINES,

32. Are those substances which, being brought into contact with the pituitary membrane, excite a discharge from the nose.

33. The principal are *tobacco, white hellebore, asarabacca* and *euphorbium.*

ESCHAROTICS,

34. Are substances which erode and destroy the parts to which they are applied.

35. The principal are *potash, nitrate of silver, mineral acids, sulphate of copper,* and *muriate of antimony.*

EXPECTORANTS,

36. Are substances which excite a discharge of mucus from the lining membrane of the trachea and lungs.

37. The principal expectorants are *antimonials, ipecacuanha, squills, digitalis, tobacco, ammoniacum,* and the *balsams.*

LITHONTRIPTICS,

38. Are substances which are considered to dissolve urinary calculi.

39. They are *soda, potash, lime, magnesia,* and some of the acids.

NARCOTICS,

40. Are medicines which induce sleep, and generally alleviate pain, some by a stimulant action, and others by effects directly sedative.

41. The principal are *opium*, *hemlock*, *henbane*, *aconite*, *stramonium*, *belladonna*, *lactuca virosa*, *tobacco*, *hops*, *camphor*, and *nux vomica*.

SIALOGOGUES,

42. Increase the secretion and discharge of saliva.

43. The principal are *tobacco*, *pellitory*, and *mercury*.

STIMULANTS,

44. Are those substances which merely increase the power of the circulation.

45. They are principally *ammonia*, *æther*, *cantharides*, *mustard*, and the *aromatics* in general.

TONICS,

46. Are those substances which restore the healthy tone of the stomach. They are supposed to act by increasing muscular power; but it is more probable that they are beneficial, by checking the inordinate excitement, or irritability of the stomach and viscera.

47. The principal are *sulphate of zinc* and *iron*; *acids* in small doses; and the various bitters, such as *cinchona*, *gentian*, &c.

TABLES OF THE MATERIA MEDICA.

Officinal Name.	*Systematic Name.*	*English Name.*	*Class and Order.*	*Place of Growth.*	*Operation and Use.*	*Dose.*	*Officinal Preparations*
Abietis Resina	Sp.32. Pinus Abies	Resin of the Spruce Fir	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Coniferæ	North Europe	Externally in plasters, as a rubefacient	....	Empl. Galb. c. —— opii
Absinthium.	Sp. 63. Artemisia absinthium	Leaves and tops of common wormwood	Cl. 19. Ord. 2 Syngenesia Superflua' N. O. Compositæ Nucamentaceæ	Indigenous.	Tonic and anthelmintic	ʒj to ʒji, given in infusion	....
Acaciæ Gummi	Sp. 87. Acacia vera.	Acacia gum; a natural exudation	Cl. 23. Ord. 1. Polygamia Monœcia N. O. Lomentaceæ	Africa	Demulcent	℈j to ʒij. in powder, or as a mucilage	Muc. acaciæ Mis. Cornu. usti —— Cretæ —— Moschi Conf. amygd. P. cret. comp. — Trag. c.
Acetosæ Folia	Sp. 31. Rumex Acetosa.	Leaves of Sorrel	Cl. 6. Ord. 2. Hexan. digynia N.O. Oleraceæ	Indigenous.	Refrigerant and diuretic	ad libitum.	....

Aceto-sella	Sp. 25. Oxalis Acetosella	Woodsorrel	Cl. 10. Ord. 5. Decandria Pentagynia N. O. Gruinales	Indigenous	Refrigerant	ad libitum	....
Acetum	....	Vinegar	....	....	Refrigerant, diaphoretic, and diuretic in fevers	ʒj. to ʒiv.	Acet. Scillæ —— Colchici Catapl. Sinapis Cerat. Saponis Linim. æruginis
Acidum Aceticum fortius	Acidum Aceticum e ligno distillatum	Pyroligneous acid	....	....	Stimulant and Rubefacient, Diluted, used as the acetum	....	....
Acidum Citricum	....	Citric acid	....	....	Refrigerant in fevers	gr. x. to ʒij.	....
Acidum	Acidum Hy-	Prussicacid*	....	....	Sedative in	♏ ij. to	....

---

* Prussic acid is prepared in the following manner at Apothecaries' Hall: a pound of cyanide of mercury is put into a retort, with a pound of muriatic acid, and six pints of water; heat is applied, and six pints are distilled over into a capacious receiver. The composition of the dry acid is . . 1 cyanogen 26, 1 hydrogen 1 } 27.

This acid combines with salifiable bases, forming that class of bodies called hydrocyanates.

Cyanogen may be obtained by heating dry prussiate of mercury, and collecting the gas over mercury. It burns with a bluish flame, and has a strong disagreeable smell. It forms with bases, the salts named cyanides.

Cyanogen is composed of— 2 carb. $6 \times 2 = 12$, 1 nitr. 14 } 26.

		cury by muriatic acid.			irritability of the stomach.	ration	
Acidum Sulphuricum	Sp.gr.1,850	Sulphuric acid	....	....	Escharotic, astringent, and tonic, in small diluted doses.	....	Acid. sulph. dil.
Aconiti Folia	Aconitum Sp. 8. Napellus	Monkshood	Cl. 13. Ord. 3. Polyandria Trigynia N. O. Multisiliquæ	Germany	In chronic rheumatism, gout, and paralysis	gr. j. to gr. v. of the extract.	Extr. Aconiti
Adeps	Sus Scrofa	Fat of the hog	....	....	For making ointments	....	....
Ærugo	Subacetas Cupri Impura	Verdigris is obtained by immersing plates of copper in the husks and refuse of expressed grapes, and by exciting in them the acetous fermentation			Tonic in epilepsy, and emetic, and externally to ulcers	gr. $\frac{1}{8}$ to gr. j. as a tonic, gr. ij. to gr. v. as an emetic.	Lin. æruginis

Allium Radix	Sp. 14. Allium Sativum	Garlic, the bulb	Cl. 6. Ord. 1. Hexandria Monogynia N. O. Spathaceæ	Europe	Stimulant, expectorant, and diaphoretic, in asthma, catarrh, &c.	ʒj. to ʒij.	…………
Aloes Spicatæ Extractum	Sp. 2. Aloe Spicata	The extract of spiked aloe	Cl. 6. Ord. 1. Hexandria Monogynia N. O. Coronariæ	Cape of Good Hope	Cathartic and emmenagogue, given in habitual costiveness, &c.	gr. v. to gr. xv.	Dec. Al. comp. Extr. Aloes —— Coloc. c. Pil. Al. c. Myrrh. —— Gamb. c. Pulv. Aloes c. Tinct. Aloes —— comp. —— Benz. c. Vin. Aloes
Althææ, Folia et Radix.	Sp. 1. Althæa Officinalis	Marshmallow root and leaves	Cl. 16 Ord. 8. Monadelphia Polyandria N. O. Columniferæ	Indigenous	Demulcent in visceral inflammation, and calculous disorders	ad libitum.	Syr. Althææ

Alumen	Supersulphas Aluminæ et Potassæ.	Alum*	....	....	Astringent and styptic, in hæmorrhage and diarrhœa	gr. x. to ℈ j.	Alumen exsiccatum Liq. Aluminis comp.
Ammoniacum	Sp. Heracleum Gummiferum.	Gum ammoniacum, a natural exudation.	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Africa	Expectorant, given in asthma and catarrhal affections	gr. x. to ʒss.	Mist. Ammoniaci Pilula Scillæ comp. Empl. Ammoniaci ——— cum Hyd.
Ammoniæ Murias	Murias Ammoniæ†	Muriate of Ammonia	....	....	Aperient and diuretic: externally, in cold lotions to any inflamed part	....	Subcarb. Ammoniæ Liq. Ammo- Ferrum Ammoniatum

---

* Alum is usually obtained by burning schistose pyritic clays, or alum ores; in which case, the oxygen of the atmosphere forms sulphuric acid with the sulphur of the iron; and the sulphuric acid, combining with the alumina, forms supersulphate of alumina, and this is afterwards mixed with potash.

† The ammoniacal liquor obtained from refuse animal matter is saturated by sulphuric acid; and the sulphate of ammonia, thus formed, is decomposed by muriate of soda; muriate of ammonia is sublimed, and sulphate of soda remains in the retort.

Amygdalæ Amaræ	Sp. 2. Amygdalus Communis	Bitter Almonds, their active principle is prussic acid	Cl. 12. Ord. 1. Icosandria Monogynia N. O. Pomaceæ	Spain and Italy	Narcotic and sedative, in coughs	....	....
— Dulces	....	Sweet Almonds	....	....	Used in emulsions	....	Ol. Amygd. Conf. Amyg. Mist. Amyg.
Amylum	Sp. 2. Triticum Hybernum	Starch, the fæcula of wheat	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	Indigenous	Demulcent, as a vehicle in decoction for opiate and other injections	....	Mucilago Amyli Pulv. Trag. comp.
Anethi Semina	Sp. 1. Anethum graveolens	Dill Seed	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	South of Europe	Carminative and stimulant, used in flatulency of infants	gr. x. to ℈j. A teaspoonful of Dill water to infants	Aq. Anethi
Anisi Semina	Pimpinella Sp. Anisum	Anise Seeds	Cl. 5. Ord. 2. Pentandria Digynia	Ægypt and Spain	Carminative used as Dill	gr. x. to ʒj. bruised	Sp. Anisi Ol. Anisi

Anthemidis Flores	Sp. 15. Anthemis Nobilis	Chamomile Flowers	Cl. 19. Ord. 2. Syngenesia Superflua	Indigenous	Tonic and carminative, given in dyspepsia, gout, and colic. The warm infusion is emetic.	gr. x. to ℈j. in powder	Inf. Anthem Extr. do.
Antimonii Sulphuretum	Sulphuretum Antimonii	Sulphuret of antimony, a natural ore	…………	……..	Alterative and diaphoretic, given in chronic gout and rheumatism	gr. ij. to gr. x.	Ant. sulph. Pulv. Antim.
Antimonii Vitrum	Antimonii Oxydum Sulphuretum Vitrifactum	Glass of antimony, composed of protoxide of antimony, sulphur, and a little silex	…………	……..	Used to make tartar emetic	…….	Antomonium Tartarizatum
Argentum	Argentum Purificatum	Silver	…………	……..	To make the nitrate	…….	
Armoraciæ Radix	Sp 8. Cochlearia Armoracia	Horseradish root	Cl. 15. Ord. 1. Tetradynamia Siliculosa N. O. Siliquosæ	Indigenous	Stimulant and diuretic, given in dropsy and chronic rheumatism	℈j. to ʒj.	Inf. Armorac. comp. Sp. Armoraciæ comp.

Amygdalæ Amaræ	Sp. 2. Amygdalus Communis	Bitter Almonds, their active principle is prussic acid	Cl. 12. Ord. 1. Icosandria Monogynia N. O. Pomaceæ	Spain and Italy	Narcotic and sedative, in coughs	....	....
— Dulces	....	Sweet Almonds	....	....	Used in emulsions	....	Ol. Amygd. Conf. Amyg. Mist. Amyg.
Amylum	Sp. 2. Triticum Hybernum	Starch, the fæcula of wheat	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	Indigenous	Demulcent, as a vehicle in decoction for opiate and other injections	....	Mucilago Amyli Pulv. Trag. comp.
Anethi Semina	Sp. 1. Anethum graveolens	Dill Seed	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	South of Europe	Carminative and stimulant, used in flatulency of infants	gr. x. to ℈j. A teaspoonful of Dill water to infants	Aq. Anethi
Anisi Semina	Pimpinella Sp. Anisum	Anise Seeds	Cl. 5. Ord. 2. Pentandria Digynia	Ægypt and Spain	Carminative used as Dill	gr. x. to ʒj. bruised	Sp. Anisi Ol. Anisi

Anthemidis Flores	Sp. 15. Anthemis Nobilis	Chamomile Flowers	Cl. 19. Ord. 2. Syngenesia Superflua	Indigenous	Tonic and carminative, given in dyspepsia, gout, and colic. The warm infusion is emetic.	gr. x. to ℈j. in powder	Inf. Anthem Extr. do.
Antimonii Sulphuretum	Sulphuretum Antimonii	Sulphuret of antimony, a natural ore	....	....	Alterative and diaphoretic, given in chronic gout and rheumatism	gr. ij. to gr. x.	Ant. sulph. Pulv. Antim.
Antimonii Vitrum	Antimonii Oxydum Sulphuretum Vitrifactum	Glass of antimony, composed of protoxide of antimony, sulphur, and a little silex	....	....	Used to make tartar emetic	....	Antomonium Tartarizatum
Argentum	Argentum Purificatum	Silver	....	....	To make the nitrate	....	
Armoraciæ Radix	Sp. 8. Cochlearia Armoracia	Horseradish root	Cl. 15. Ord. 1. Tetradynamia Siliculosa N. O. Siliquosæ	Indigenous	Stimulant and diuretic, given in dropsy and chronic rheumatism	℈j. to ʒj.	Inf. Armorac. comp. Sp. Armoraciæ comp.

Benzoinum	Sp. 3. Styrax Benzoinum	Benjamin tree. The benzoin is obtained from incisions made in the bark	Cl. 10. Ord. 1. Decandria Monogynia N. O. Bicornes	Sumatra	Stimulant and expectorant, given in catarrh	gr. x. to ʒss.	Acidum Benzoicum Tr. Benz. comp.
Bistorta Radix	Sp. 3. Polygonum Bistorta	Bistort root	Cl. 8. Ord. 3. Octandria Trigynia N. O. Oleraceæ	Indigenous North Europe	Styptic and astringent, given in hæmorrhage and diarrhœa	gr. x. to ʒss.	…………
Cajuputi Oleum	Sp. Nova Melaleuca Cajuputi	Cajuputi oil is obtained by distillation from the leaves	Cl. 18. Ord. 3. Polyadelphia Icosandria N. O. Hesperideæ	Amboyna and Borneo	Stimulant and antispasmodic	♏ij. to ♏v.	…………
Calamina	Carbonas Zinci Impura	Calamine, a zinc ore	…………	………	…………	………	Calamina præparata
Calami Radix	Sp. 1. Acorus Calamus	Sweet flag root	Cl. 6. Ord. 1. Hexandria Monogynia N. O. Piperitæ	Indigenous	Tonic and aromatic, in cases of anorexia, dyspepsia, &c.	gr. x. to ʒj.	…………

Calumbæ Radix	Sp. Cocculus Palmatus	Calumba root	N. O. Menispermum	Africa	Tonic, given in diarrhœa, cholera, and vomiting, at commencement of pregnancy	gr. x. to ℈j.	Inf. Calumbæ Tinct. Calumb.
Calx	Calx	Quicklime	....	....	Used to make lime-water	....	Liquor Calcis Potassa cum Calce
Cambogia	Sp. 1. Stalagmitis Cambogioides	Gamboge; the gum exudes from the broken leaves and bark	Cl. 23. Ord. 1. Polygamia Monœcia N. O. Tricoccæ	Ceylon	Drastic purgative, and hydragogue, given in dropsies, worms, and obstinate costiveness	gr. ij. to x.	Pil. Cambogiæ comp.
Camphora	Sp. 3. Laurus Camphora	Camphor laurel; the camphor is obtained by distillation from the leaves, roots, and bark	Cl. 9. Ord. 1. Enneandria Monogynia N. O. Oleraceæ	Japan	Stimulant and diaphoretic, given in typhus, hysteria, &c.	gr. ij. to xv.	Mist. Camph. Spir. Camph. Tr. Camph. c. Lin. Campho. ——— comp. Lin. Hydrarg. Lin. Saponis

Canellæ Cortex	Sp. 1. Canella Alba	White or laurel-leaved canella bark	Cl. 11. Ord. 1. Dodecandria Monogynia N. O. Oleraceæ	West-Indian Islands	Tonic and stimulant, given in dyspepsia	gr. x. to ʒ ss. in powder, or in infusion	Vinum Aloes
Cantharis	Sp. 1. Lytta vesicatoria	Blistering fly	Cl. 5. Ord. 1. Insecta Coleoptera N. O. Eleuterata	Spain, Italy, &c. &c.	Stimulant and diuretic, in gleets, dropsy, and paralysis of the sphincter vesicæ, contraindicated in inflammations of the kidneys	gr. j. to gr. iij. in powder, or of the tincture gtt. x. to ʒ ss.	Empl. Lyttæ Cerat. Lyttæ Tinct. Lyttæ
Capsici Baccæ	Sp. 1. Capsicum Annuum	Common capsicum	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Luridæ	India	Stimulant, used in gout, rheumatism, and dyspepsia	gr. v. to, gr. x.	Tinct. Capsic.
Carbo Ligni	Carbo Ligni	Charcoal	....	....	Antiseptic; to foul ulcers	gr. x. to ʒ ss	....
Cardamines Flores	Sp. 19. Cardamine pratensis	Cuckoo flower	Cl. 15. Ord. 2. Tetradynamia Siliquosæ N. O. Siliquosæ	Indigenous	Diaphoretic and stimulant, given in spasms	℈j. to ʒj.	....

Cardamomi Semina	Sp. 1. Matonia Cardamomum	Cardamom seeds	Cl. 1. Ord. I. Monandria Monogynia N. O. Scitamineæ	India	Stomachic and carminative, in dyspepsia, &c.	gr. v. to ʒ ss.	Extr. Coloc. c. Tinct. Card. — Card. comp. — Cinnam c. — Gent. comp. — Rhei — Sennæ Sp. Æth. arom Conf. Aromat. Pulv. Cinnam. c.
Caricæ Fructus	Sp. 1. Ficus Carica	Fig tree	Cl. 23. Ord. 2 Polygamia Diœcia N. O. Scabridæ	India, Spain, Italy	Demulcent, gently purgative	ad libitum	Dec. Hordei comp. Conf. Sennæ
Carui Semina	Sp. 1. Carum Carui	Carraway seeds	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Indigenous	Carminative, in flatulence and colic	gr. x. to ʒ j.	Ol. Carui Aq. do. Sp. do. Sp. Junip. c. Tinct. Carui. c. —— Sennæ Conf. Opii —— Rutæ Empl. Cumini

Caryophylli Caryophyllorum Oleum	Sp. 24. Eugenia Caryophyllata	The unexpanded bud of the clove tree	Cl. 12. Ord. 1. Icosandria Monogynia N. O. Hesperideæ	Moluccas	Stimulant, given in gout and dyspepsia	gr. x. to ʒ ss.	Inf. Caryophyll. —— Aurant. comp. Vin. Opii Conf. Aromat. —— Scammon.
Cascarillæ Cortex	Sp. 43. Croton Cascarilla	Cascarilla bark	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Tricoccæ	Bahama islands	Tonic and stomachic, given in dyspepsia and intermittents	gr. x. to ʒj.	Tinct. Casc Inf. Cascarillæ
Cassiæ Pulpa	Sp. 18. Cassia Fistula	The pulp of the pods of purging Cassia	Cl. 10. Ord. 1. Decandria Monogynia N. O. Lomentaceæ	East and West Indies	Laxative; given to children	℥ss. to ℥j.	Pulpa Conf. Sennæ —— Cassiæ
Castoreum	Sp. 1. Castor Fiber	Castor Beaver. The castor is found in follicles situated between the anus and genitals	Cl. 1. Ord. 4. Mammalia Glires	North Europe, Asia, America	Antispasmodic, in hysteria and nervous fevers	gr. v. to ℈j.	Tinct. Castor

Catechu Extractum	Sp. 73. Acacia Catechu	Extract of the inner wood of Catechu	Cl. 23. Ord. 1. Polygamia Monœcia N. O. Lomentaceæ	Hindostan	Astringent, given in hæmorrhage and diarrhœa, &c.	gr. x. to ℈ij.	Inf. Catechu Tinct. Catechu
Centaurii Cacumina	Sp. 9. Chironea Centaurium	Common centaury tops	Cl. 5. Ord. 1. Pentandria Monogynia	Indigenous	Diaphoretic, and given as tonic in dyspepsia: an excellent substitute for gentian-root	gr. xv. to ʒj or in infusion	....
Cera Alba	....	Animal substance formed by the bee	....	....	Used in ointments	....	....
Cera Flava	....		....	....	....	....	....
Cerevisiæ Fermentum	....	Yeast	....	....	Antiseptic, in typhoid fevers, and used in poultices	....	....

Cetaceum	Sp. 2. Physeter Macrocephalus	Spermaceti is found in spongy masses within the cranium	Cl. 1. Ord. 7. Mammalia Cete	Southern Ocean	Demulcent and emollient, in dysentery, catarrh, &c.	℈j. to ʒj.	Cerat. Cet. Ung. Cetac.
Cinchonæ Cordifoliæ Cortex	Sp. 3. Cinchona Cordifolia	Yellow bark produces the most quinine*	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Contortæ	Quito, Santa Fe	Tonic and astringent, given in intermittents, chorea, after long fevers and inflammations, and in erysipelas, &c.	gr. x. to ʒ ij. of the powder: of the sulphate of quinine, gr. ij. to gr. v.	Dec. Cinchonæ Inf. Cinchonæ Extr. Cinchonæ —— resinosum Tinct. Cinchonæ —— comp. —— ammon.
Cinchonæ Lancifoliæ	Sp. 1. Lancifolia	Pale quilled bark affords most cinchonine	…………	Peru			
Cinchonæ Oblongifoliæ	Sp. 2. Oblongifolia	Red bark contains quinine and cinchonine	…………	Peru, Andes			

---

* The sulphate of quinine, or cinchonine, is obtained by boiling the bark with diluted sulphuric acid, then combining lime with it to form a sulphate of lime, which is precipitated with the base. To this, when dried, alcohol is added to dissolve the salt, which is obtained in crystals by evaporation, and again combined with sulphuric acid to form the sulphate.

Cinnamomi Cortex	Sp. 1. Laurus Cinnamomum	Cinnamon bark	Cl. 9. Ord. 1. Enneandria Monogynia N. O. Oleraceæ	Ceylon	Stimulant, carminative, in colic, &c.	gr. v. to ℈j.	Aq Cinnamomi Sp. Cinnam. Tinct. Cinnam. ——— comp. Pulv. Cinnam. c.
Cinnamomi Oleum	Do.	Oil of the bark	Do.	Do.	Do.	gtt. j. to gtt. iij.	
Coccus	Sp. 22. Coccus Cacti	Cochineal, the dried female insect	Cl. 5. Ord. 2. Insecta Hemiptera	Mexico, Georgia, South Carolina	A colouring matter	....	Tinct. Cinch. c. —— Card. c.
Colchici Radix et Semina	Sp. 1. Colchicum Autumnale	The bulb of *Meadow Saffron should be dug up between June and Aug.	Cl. 6. Ord. 3. Hexandria Trigynia N. O. Spathaceæ	Indigenous	Cathartic and diuretic, given in gout, rheumatism, and dropsy	gr. ij. to gr. viij. of the powder, ʒss. to ʒiss. of the acetum, ♏ x. to ♏ xxx. of the tincture or wine	Acetum Colchici Oxymel do. Vinum do. Spiritus Colchici Ammoniatus

---

* An alcoholic solution of guaiacum, and vinegar rubbed upon it, produce a blue colour, if it is good and properly dried.

Colocynthidis Pulpa	Sp. 1. Cucumis Colocynthis	The pulp of the capsule of bitter cucumber	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Cucurbitaceæ	Turkey	Violently cathartic, seldom given alone	gr. j. to gr. v.	Extr. Colocynth. ——— comp.
Conii Folia et Semina	Sp. 1. Conium Maculatum	Common hemlock leaves and seeds	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Indigenous	Narcotic, and palliative given in scirrhus and chronic rheumatism	gr. ii. to ℈j. of the powder or extract	Extr. Conii
Contrajervæ Radix	Sp. 5. Dorstenia Contrayerva	Contrayerva	Cl. 4. Ord. 1. Tetrandria Monogynia N. O. Scabridæ	Peru, Mexico	Tonic, stimulant, and diaphoretic, given in typhoid fevers, gout, &c.	gr. x. to ʒss.	Pulv. Contrayervæ comp.
Copaiba	Sp. 1. Copaifera Officinalis	The exudation from the trunk through holes bored in the Copaiba tree	Cl. 10. Ord. 1. Decandria Monogynia N. O. Dumosæ	South America	Diuretic and stimulant, given in gleets, leucorrhœa, &c. incompatible with nitric and sulphuric acids.	gtt. x. to ʒj.	....

Coriandri Semina	Sp. 1. Coriandrum Sativum	Common Coriander seeds	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Italy, England	Carminative, in flatulency	℈j. to ʒj.	Conf. Sennæ
Cornua	Sp. 1. Cervus Elaphus	Hartshorn shavings	....	....	Demulcent, nutrient, to make creta preparata	ad libitum	Cornu ustum Pulv. Antimonialis
Creta	Carbonas Calcis Friabilis	Chalk	....	....	....	....	....
Croci Stigmata	Sp. 1. Crocus Sativus	Common saffron	Cl. 3. Ord. 1. Triandria Monogynia N. O. Ensatæ	Indigenous	Antispasmodic, in chlorosis and nervous affections	gr. x. to ʒj.	Conf. Aromatic Pyl. Al. c. Myrrh. Syr. Croci Tinct. Aloes c. — Cinch. c. — Rhei — Rhei comp. Dic. Al. comp.
Cubeba	Sp. Piper Cubeba	Cubebs	Cl. 2. Ord. 9. Diandria Digynia N. O. Piperitæ	Java	Stimulant, in gonorrhœa, gleets, &c.	gr. x. to ʒss.	....

Cumini Semina	Sp. 1. Cuminum Cyminum	Cumin seeds	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Egypt, Italy, Malta, &c.	Carminative, and externally stimulant and discutient	℈j. to ʒj.	Empl. Cumini
Cupri Sulphas	Sulphas Cupri	Sulphate of copper	....	....	Tonic, given in epilepsy and intermittents; emetic and escharotic	gr. ¼ to gr. ij. as a tonic gr.v. to gr x. as an emetic	
Cuspariæ Cortex	Sp. Cusparia Febrifuga	Cusparia bark	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Quassiæ	South America	Tonic and stimulant, given in intermittents and dyspepsia	gr. x. to ℈j.	Cuprum Ammoniat.
Cydoniæ Semina	Sp. 17. Pyrus Cydonia	Quince seeds	Cl. 12. Ord. 5. Icosandria Pentagynia N. O. Pomaceæ	Crete	Emollient, in catarrh	ad libitum	Dec. Cydoniæ
Dauci Radix	Daucus Carota, var. Hortensis	Garden carrot	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Indigenous	In flatulency: the root is used as a poultice	℈j. to ʒj. of the bruised seeds	
—Semina	var. Agrestis	wild					

Digitalis Folia et Semina	Sp. 1. Digitalis Purpurea	Foxglove, seeds and leaves	Cl. 14. Ord. 2. Didynamia Angiospermia N. O. Luridæ	Indigenous	Diuretic and sedative, given in inflammations, dropsies, hæmorrhages, &c.	gr. ss. to gr. iij. of the powder; of the tincture ♏ v. to ʒ ss.	Inf. Digitalis Tinct. do.
Dolichi Pubes	Sp. 16. Dolichos Pruriens	Cowhage; the hairs scraped off the pods	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	America	A mechanical anthelmintic, to expel lumbrici or ascarides	gr. v. to gr. x.	
Dulcamaræ Caulis	Sp. 15. Solanum Dulcamara	The stalks of bittersweet, or woody nightshade	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Luridæ	Indigenous	Narcotic and diuretic, given in dropsy and chronic rheumatism	℈ j. to ʒ j.	Decoct. Dulcam.
Elaterii Pepones	Sp. 13. Momordica Elaterium	The fæcula of the juice of squirting cucumber	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Cucurbitaceæ	South Europe	Violently cathartic and hydragogue, given in dropsy	gr. ss. to gr. ij. of the extract	Extr. Elaterii

Elemi	Sp. 2. Amyris Elemifera	Gum Elemi exudes from incisions made in the bark	Cl. 8. Ord. 1. Octandria Monogynia N. O. Terebintaceæ	Carolina, Brazil	Stimulant	gr. x. to ʒ ss.	Ung. Elemi comp.
Euphorbiæ Gummi Resina	Sp. 7. Euphorbia Officinarum	Officinal Euphorbium plant; the gum exudes from the cut stem	Cl. 11. Ord. 3. Dodecandria Trigynia N. O. Tricoccæ	Africa	Used as an errhine in lethargy and amaurosis; violently cathartic	gr. ij. to gr. v.	....
Farina	Sp. 2. Triticum hybernum	Flour	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	Indigenous	....	....	....
Ferrum	Ferri Ramenta et Fila	Iron filings	....	....	Tonic and anthelmintic, given in dyspepsia and worm cases	gr. v. to ʒj.	Ferri Sulphas Ferrum Tartarizatum Liq. Ferri Alkalinus Vin. Ferri Ferrum Ammoniatum

Filicis Radix	Sp. 4. Aspidium Filix Mas	Male fern root	Cl. 24. Ord. 1. Filices Cryptogamia N. O. Filices	Indigenous	Anthelmintic	ʒj. to ʒiv.	....
Fœniculi Semina	Sp. 3. Anethum Fœniculum	Fennel seeds	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Indigenous	Carminative and diuretic	℈j. to ʒj. of the bruised seeds	....
Fucus	Sp. 2. Fucus Vesiculosus	Bladder-wrack	Cl. 24. Ord. 3. Cryptogamia Algæ N. O. Algæ	Britain	Deobstruent, in scrofula	gr. x. to ℈ij.	....
Galbani Gummi Resina	Sp. 2. Bubon Galbanum	The Gum Resin of Lovage-leaved Bubon, a natural exudation	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	Africa	Stimulant and antispasmodic; given in hysteria, chlorosis, &c.	gr. v. to ʒss.	Empl. Galb. comp. Pil. Galb. comp.
Gallæ	Sp. 33. Cynips Quercus folii	Dyer's oak Gall nuts	Cl. 21. Ord. 6. Monœcia Polyandria N. O. Amentaceæ	Asia Minor	Astringent; given in hæmorrhages, and externally to piles	gr. ij. to x.	....

Gentianæ Radix	Sp. 1. Gentiana lutea	Gentian root	Cl. 5. Ord. 2. Pentandria Digynia N. O. Rotaceæ	Switzerland	Tonic and stomachic, in dyspepsia, &c.	gr. x. to ʒj.	Tr. Gent. c. Inf. do. Extr. Gentian
Glycyrrhizæ Radix	Sp. 4. Glycyrrhiza glabra	Common liquorice root	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	South Europe	Demulcent, in catarrh	gr. x. to ʒj. of the powder	Dec. Sars. c. Inf. Lini Extr. Glycyrrhizæ Conf. Sennæ
Granati Cortex	Sp. 1. Punica Granatum	Pomegranate, bark, flowers, and bark of the root	Cl. 12. Ord. 1. Icosandria Monogynia N. O. Pomaceæ	South Europe	Astringent and anthelmintic; given in dysentery and for tænia, used as a gargle, and as an injection in leucorrhœa	℈j. to ʒj.	Incompat. Sulphas Ferri
Guaiaci Resina et Lignum	Sp. 2. Guaiacum Officinale	Officinal Guaiacum; the gum resin exudes from the bark; its green colour depends on the absorption of oxygen	Cl. 18. Ord. 1. Decandria Monogynia N. O. Gruinales	Jamaica	Diaphoretic and purgative; given in rheumatism, cutaneous diseases, &c.	gr. x. to ʒss.	Dec. Sars. comp. Mist. Guaiaci Tinct. do. — Guaiaci ammon. Pil. Hyd. sub. c.

Hæmatoxyli Lignum	Sp. 1. Hæmatoxylon Campechianum	Campeachy or Logwood	Cl. 10. Ord. 1. Decandria Monogynia N. O. Lomentaceæ	South America, Campeachy	Astringent, in diarrhœa and dysentery	℈j. to ʒj.	Extr. Hæm.
Hellebori Fœtidi Folia	Sp. 6. Helleborus Fœtidus	Fœtid Hellebore leaves	Cl. 13. Ord. 6. Polyandria Polygynia N. O. Multisiliquæ	Indigenous	Cathartic and anthelmintic; used for the lumbricus teres	gr. v. to ℈j.	…………
Hellebori Nigri Radix	Sp. 3. Helleborus Niger	Black Hellebore root	The same	Austria, Italy	Cathartic and emmenagogue; given in mania, melancholia, &c.	gr. v. to ℈j.	Tinct. Helleb.
Hordei Semina	Sp. 3. Hordeum Distichon	Barley	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	………	Used as a demulcent, in decoctions	ad libitum	Dec. Hordei —— comp.
Humuli Strobili	Sp. 1. Humulus Lupulus	Common Hop	Cl. 22. Ord. 5. Diœcia Pentandria N. O. Scabridæ	Indigenous	Diuretic, tonic, and narcotic; given in dyspepsia, rheumatism, &c.	gr. v. to ℈ i.	Extr. Hum. Tr. Humuli

Hydrargyrum	....	Mercury or Quicksilver*	....	....	....	....	Hyd. purificat. — nit.-oxyd. — oxyd. cin. —— rubrum — oxymurias — submurias — sulphuretum nigrum —— rubrum — cum Cretâ — præcipitatum album Ung. Hyd. fort. —— Mitius Lin. Hyd. Pil. Hyd.
Hyoscyami Folia et Semina	Sp. 1. Hyoscyamus Niger	Common Henbane leaves and seeds	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Luridæ	Indigenous	Anodyne and narcotic; given in spasms, gout, and asthma	gr. v. to xv. of the extract or powder	Extr. Hyos. Tinct. do.
Jalapæ Radix	Sp. 61. Convolvulus Jalapa	Jalap root	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Campanaceæ	South America	Cathartic and hydragogue; given in dropsies and costiveness	gr. x. to ʒ ss.	Tinct. Jalapæ Extr. Jalapæ

* Mercury is found in small quantities pure and unalloyed; but the most part is obtained from cinnabar, a sulphuret of mercury, which is subjected to an intense heat with lime, and the pure mercury sublimes, and is condensed in a receiver.

Ipecacuanhæ Radix	Calicocca Ipecacuanha	Ipecacuanha root, active principle emetine	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Aggregatæ	Brazil	Diaphoretic and expectorant, given in pertussis and asthma: emetic. Incompatibles, vegetable astringents	gr. ss. to gr. ij. gr. x. to ʒss., as an emetic	Pulv. Ipec. c. Vin. Ipecac.
Juniperi Baccæ et Cacumina	Sp. 10. Juniperus Communis	Juniper berries and tops	Cl. 22. Or. 13. Diœcia Monadelphia N.O.Coniferæ	Indigenous	Diuretic in dropsies	ʒss. to ʒj.	Ol. Juniperi Sp. Juniperi comp.
Kino	Sp. Pterocarpus Erinacea	Kino, the extract of the tree	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	Africa	Astringent; given in diarrhœa, dysentery, hæmorrhages and fluor albus*	gr. x. to ʒss.	Tr. Kino Pulv. Kino. comp.
Krameriæ Radix	Sp. Krameria Triandria	Rhatany root	Cl. 3. Ord. 1. Triandria Monogynia	Java	Astringent, in hæmorrhages	gr. xx. to ʒss.	

---

* Incompatibles, mineral acids, alkalies and carbonates, acetate of lead, muriate of mercury, nitrate of silver, sulphate of iron, tartarized antimony, and isinglass.

Lactuca	Sp. 1. Lactuca Sativa	Garden lettuce; the inspissated juice is named Lactucarium	Cl. 19. Ord. 1. Syngenesia Æqualis N. O. Compositæ semiflosculosæ	Europe	Narcotic and anodyne; given in phthisis	ad libitum gr. i. to gr. vj. of the inspissated juice	....
Lavandulæ Flores	Sp. 1. Lavandula Spica	Lavender tops	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	South of Europe	Stimulant, tonic, in dyspepsia	℈j. to ʒj.	Ol. Lav. Sp. Lavend. —— comp.
Lauri Baccæ et Folia	Sp. 10. Laurus Nobilis	Common sweet bay-leaves and berries. Their active principle is prussic acid	Cl. 9. Ord. 1. Enneandria Monogynia N. O. Oleraceæ	Italy	Stimulant and narcotic; given in coughs and colic	gr. v. to ʒ ss.	Empl. Cumini Conf. Rutæ
Lichen Islandicus	Sp. 1. Lichen Islandicus	Iceland moss	Cl. 24. Ord. 5. Cryptogamia Algæ N. O. Algæ	Indigenous, Iceland, &c.	Tonic and nutrient; given in coughs, dyspepsia, &c.	ʒj. to ℥ ss.	Dec. Lichenis

Limones	Sp. 1. Citrus Medica	Lemons	Cl. 18. Ord. 3. Polyadelphia Icosandria N.O.Pomaceæ	Spain, Italy, &c. &c.	Refrigerant; in fevers, phthisis and scorbutus	ad libitum	Acid. Citr. Syr. Limonis
Limonum Cortex	....	Lemon peel	....	....	Tonic, in dyspepsia, &c.	gr. x. to ʒ ss.	Inf. Aurant. — Gent. c.
Limonum Oleum	....	Essential oil of lemon peel	....	....	....	....	....
Linum Catharticum	Sp. 26. Linum Catharticum	Purging flax	Cl. 5. Ord. 5. Pentandria Pentagynia N. O. Gruinales	Indigenous	Purgative	ʒ ss. to ʒj. in substance or infusion	....
Lini Usitatissimi Semina	Sp. 1. Linum Usitatissimum	Common flax seeds	The same	Do.	Demulcent, in catarrh, gonorrhœa, &c. The powder forms an excellent poultice	Ad libitum	Ol. Lini
Magnesiæ Subcarbonas	Subcarbonas Magnesiæ	Subcarbonate of magnesia	....	....	Antacid, laxative	ʒ ss. to ʒ ij.	Magnesia

Lactuca	Sp. 1. Lactuca Sativa	Garden lettuce; the inspissated juice is named Lactucarium	Cl. 19. Ord. 1. Syngenesia Æqualis N. O. Compositæ semiflosculosæ	Europe	Narcotic and anodyne; given in phthisis	ad libitum gr. i. to gr. vj. of the inspissated juice	....
Lavandulæ Flores	Sp. 1. Lavandula Spica	Lavender tops	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	South of Europe	Stimulant, tonic, in dyspepsia	℈j. to ʒj.	Ol. Lav. Sp. Lavend. —— comp.
Lauri Baccæ et Folia	Sp. 10. Laurus Nobilis	Common sweet bay-leaves and berries. Their active principle is prussic acid	Cl. 9. Ord. 1. Enneandria Monogynia N. O. Oleraceæ	Italy	Stimulant and narcotic; given in coughs and colic	gr. v. to ʒ ss.	Empl. Cumini Conf. Rutæ
Lichen Islandicus	Sp. 1. Lichen Islandicus	Iceland moss	Cl. 24. Ord. 5. Cryptogamia Algæ N. O. Algæ	Indigenous, Iceland, &c.	Tonic and nutrient; given in coughs, dyspepsia, &c.	ʒj. to ℥ ss.	Dec. Lichenis

Limones	Sp. 1. Citrus Medica	Lemons	Cl. 18. Ord. 3. Polyadelphia Icosandria N.O.Pomaceæ	Spain, Italy, &c. &c.	Refrigerant; in fevers, phthisis and scorbutus	ad libitum	Acid. Citr. Syr. Limonis
Limonum Cortex	....	Lemon peel	....	....	Tonic, in dyspepsia, &c.	gr. x. to ʒ ss.	Inf. Aurant. — Gent. c.
Limonum Oleum	....	Essential oil of lemon peel	....	....	....	....	....
Linum Catharticum	Sp. 26. Linum Catharticum	Purging flax	Cl. 5. Ord. 5. Pentandria Pentagynia N. O. Gruinales	Indigenous	Purgative	ʒ ss. to ʒj. in substance or infusion	....
Lini Usitatissimi Semina	Sp. 1. Linum Usitatissimum	Common flax seeds	The same	Do.	Demulcent, in catarrh, gonorrhœa, &c. The powder forms an excellent poultice	Ad libitum	Ol. Lini
Magnesiæ Subcarbonas	Subcarbonas Magnesiæ	Subcarbonate of magnesia	....	....	Antacid, laxative	ʒ ss. to ʒ ij.	Magnesia

Magnesiæ Sulphas	Sulphas Magnesiæ Purificata	Sulphate of magnesia	…………	……	Purgative and diuretic*	ʒij. to ℥j.	…………
Malva	Sp. 43. Malva Sylvestris	Common mallow, the whole plant	Cl. 16. Ord. 8. Monadelphia Polyandria N. O. Columniferæ	Indigenous	Demulcent; given in dysentery and strangury	ad libitum	…………
Manna	Sp. 15. Fraxinus Ornus	Flowering ash; the manna exudes from the branches	Cl. 23. Ord. 2. Polygamia Diœcia N. O. Sepiariæ	South Europe	Gentle laxative, for children	℥ss. to ℥ij.	Conf. Cassiæ
Marmor Album	Carbonas Calcis Duræ	……… White marble	………… …………	…… ……	………… …………	…… ……	………… …………
Marrubium	Sp. 8. Marrubium Vulgare	White horehound, the plant	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	Indigenous	Tonic and diuretic; given in asthma, coughs, &c.	℈j. to ʒj.	…………

---

* Incompatibles, muriates of ammonia, barytes, and lime, the acetates of lead, nitrate of silver, fixed alkalies and their carbonates.

		the trunk and branches	N. O. Amentaceæ	Spain	and leucorrhœa		
Mel	Mel	Honey collected by bees from flowers	....	....	Laxative	Ad libitum	Mel Boracis — Rosæ Oxymel —— Scillæ
Mentha Piperita	Sp. 13. Mentha Piperita	Peppermint	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	Indigenous	Carminative, in flatulency, nausea, and colic	gr. x. to ʒj.	Aq. Menthæ p. Ol. do. Sp. do.
Mentha Viridis	Sp. 7. Mentha Viridis	Spearmint	Do.	Do.	Do.	Do.	Aq. Menth. v. Ol. do. Sp. do.
Menyanthes	Sp. 4. Menyanthes Trifoliata	Buckbean	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Preciæ	Indigenous	Tonic and purgative; given in gout, rheumatism, and intermittents	ʒss. to ʒj. or in infusion	....

Mezerei Cortex	Sp. 1. Daphne Mezereum	Common Mezereon bark	Cl. 8. Ord. 1. Octandria Monogynia N. O. Vepreculæ	North Europe	Diaphoretic and stimulant; given in rheumatism and cutaneous diseases	gr. j. to gr. x.	Decoct. Mez. — Sarsap.
Mori Baccæ	Sp. 5. Morus Nigra	The fruit of the mulberry tree	Cl. 21. Ord. 4. Monœcia Tetrandria N. O. Scabridæ	Persia and Italy	Refrigerant and laxative, given in febrile disorders	Ad libitum	Syr. Mori
Moschus	Sp. Moschus Moschiferus,	The musk is found in a bag situated between the navel and prepuce of the musk deer	Cl. 1. Ord. 5. Mammalia Pecora	Thibet	Stimulant and antispasmodic; given in tetanus, hysteria, and epilepsy	gr. iiij. to ʒ j.	Mist. Moschi
Myristicæ Nuclei	Sp. 1. Myristica moschata	Nutmeg tree	Cl. 22. Ord. 13. Diœcia Monadelphia N. O. Lauri	Molucca Islands	Aromatic, stimulant, and narcotic; given in dyspepsia and diarrhœa	gr. v. to ℈ j. of the oil, ♏ ij. to ♏ v.	Sp. Myrist. — Lavend. c. Conf. Aromat. Empl. Picis comp.

Myrrha	Nondum descriptum	Myrrh	....	....	Expectorant and stimulant, given in catarrh, dyspepsia	gr. x. to ʒj.	Tinct. Myrrhæ Pil. Al. c. do. — Ferri c. do. — Galb. c. Dec. Aloes c. Mist. Ferri c.
Olibanum	Sp. Juniperus Lycia	The concrete gum of olibanum	Cl. 22. Ord. 13. Diœcia Monadelphia N. O. Coniferæ	India	Stimulant, seldom used but to scent sick rooms	gr. v. to ℈j.	....
Olivæ Oleum	Sp. 1. Olea Europæa	European olive	Cl. 2. Ord. 1. Diandria Monogynia N. O. Sepiariæ	Europe	Demulcent, in catarrh	ʒj. to ʒij.	Lin. Amm. fortius
Opium	Sp. 7. Papaver Somniferum	The concrete juice of white poppy*	Cl. 13. Ord. 1. Polyandria Monogynia N. O. Rhœadeæ	Turkey	Narcotic, stimulant, and anodyne	gr. ss. to gr. ij.	Conf. Opii Empl. Opii Extr. do. Pil. Sap. c. Opii Pulv. Cornu ust. c. Opii —Cret. c. c. do. —Ipec. c. —Kino c. Tinct. Opii — Camph. c. Vin. Opii

---

* The active principles are an alkaline base, named morphia, and a stimulant principle called narcotine. Morphia is readily obtained by triturating powdered opium with acetic acid. Ammonia is then added to the filtered liquors, and by combining with the acetic acid, precipitates the impure morphia, which is purified by digesting it in cold alcohol, and crystallized by evaporation after being dissolved in boiling alcohol.

Narcotine is obtained by digesting opium in ether, and gently evaporating the filtered solution.

Incompatible substances, hyd. oxymurias, plumb. acetas, alkalin, inf. gall. inf. cinch. cordifoliæ.

Opoponacis Gummi Resina	Sp. 3. Pastinaca Opoponax	Opoponax or rough parsnip. Opoponax is the inspissated juice obtained by incision in the roots	Cl. 5. Ord. 2. Pentandria Digynia N. O. Umbellatæ	South Europe, Levant	Antispasmodic, emmenagogue, in hysteria and amenorrhœa	gr. x. to ʒ ss.	…………
Origanum	Sp. 18. Origanum Vulgare	Common Marjoram leaves	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	Indigenous	Tonic and stomachic, given in debility of the stomach	gr. v. to ℈j.	Ol. origani
Ovum	Sp. 1. Phasianus Gallus	Egg	Cl. 2. Ord. 5. Aves Gallinæ	……..	Nutrient	Ad libitum	…………
Papaveris Cap.	Sp. 7. Papaver Somniferum	Vide supra	…………	……..	Anodyne; used in fomentations	……..	Dec. Papaveris Syr. Papaveris Extr. do.
Petroleum	Petroleum	Petroleum; Barbadoes tar	…………	……..	Antispasmodic, given in asthma and rheumatism	gr. x. to ʒ ss.	…………

Pimentæ Baccæ	Sp. 28. Myrtus Pimenta	Allspice	Cl. 12. Ord. 1. Icosandria Monogynia N. O. Hesperideæ	South America, West Indies	Tonic and stimulant; given in dyspepsia	gr. v. to ℈ j.	Aq. Pimentæ Ol. do. Sp. do. Syr. Rhamni
Piperis Longi Fructus	Sp. 12. Piper Longum	Long Pepper	Cl. 2. Ord. 3. Diandria Trigynia N. O. Piperitæ	Malabar, Bengal	Tonic and stimulant, given in dyspepsia, retrocedent gout, &c.	gr. v. to ℈ j.	Conf. Opii Pulv. Cinnam. comp. — Cret. c. Tinct. Cinnam. C.
Piperis Nigri Baccæ	Sp. 1. Nigrum	Black Pepper	Ut longum	East Indies	The same	gr. v. to ʒ j.	Conf. Pip. nigri
Pix Abietina	Sp. 32. Pinus Abies	The resin exudes from incision in the bark of the Norway Spruce Fir.	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Coniferæ	North Europe, and Asia	Rubefaciant, stimulant, and diuretic	....	Empl. Picis. c.
Pix Liquida PixNigra	Sp. 1. Sylvestris	Scotch Fir. The liquid resin is obtained by applying heat. Black Pitch is the same, merely inspissated.	....	....	....	....	Ung. Picis. liq. — nig.

Plumbi Subcarbonas	Subcarbonas Plumbi	Subcarbonate of lead, or cerusse	....	....	Astringent and sedative; used externally, never used internally	....	Plumb. acetas
Plumbi Oxydum Semi-vitreum	....	Litharge	....	....	....	....	Liq. Plumb. subacetatis Empl. Plumbi Cerat. Saponis
Porri Radix	Sp. Allium Porrum	Leek root	Cl. 6. Ord. 1. Hexandria Monogynia N. O. Spathaceæ	....	Expectorant and anthelmintic given in asthma, catarrh, and worms	ʒj. to ℥ss. of the juice	....
Potassæ Nitras	Nitras Potassæ Purificata	Nitrate of potash. Nitre is formed by the decomposition of animal and vegetable substances.	....	....	Refrigerant and diuretic given in inflammations and hæmorrhages	gr. x. to ʒss.	....
Potassæ Sulphas	Sulphas Potassæ	Sulphate of potash	....	....	Purgative, in dyspepsia, &c.	ʒj. to ʒij.	....

	sæ impura	tained by lixiviating wood ashes, and evaporating the lee.					
Potassæ supertartras	Supertartras Potassæ Purificata	Supertartrate of potash. It exists in grape juice, is more soluble in water than in spirit, and is deposited in wine casks on account of the vinous fermentation.	....	....	Diuretic and purgative, given in dropsy	ʒss. to ʒj.	Ferrum Tartarizat. Potass. Tart. Acid. Tartaricum Antimonium Tart.
Pruna	Sp. 29. Prunus Domestica	The dried fruit of the common plum	Cl. 12. Ord. 1. Icosandria Monogynia N.O. Pomaceæ	Asia and Europe	Laxative and nutrient	Ad libitum	Conf. Sennæ
Pterocarpi Lignum	Sp. 6. Pterocarpus Santalinus	Red Saunders tree	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	India	Used as a colouring matter	....	Sp. Lav. c.
Pulegium	Sp. 20. Mentha Pulegium	Pennyroyal	Cl. 14. Ord. 1. Didynamia Gymnospermia N. O. Verticillatæ	Indigenous	Expectorant and emmenagogue, given in hysteria, asthma, &c.	gr. x. to ʒj.	Aq. Pulegii Ol. do. Sp. do.

Pyrethri Radix	Sp. 25. Anthemis Pyrethrum	Pellitory of Spain	Cl. 19. Ord. 2. Syngenesia Superflua N. O. Compositæ discoideæ	Levant, Barbary, &c.	Stimulant and sialagogue, used in apoplexy and for toothach	gr. iiij. to gr. x.; to be chewed, to excite the saliva	....
Quassiæ Lignum	Sp. 3. Quassia Excelsa	Lofty quassia	Cl. 10. Ord. 1. Decandria Monogynia N. O. Gruinales	Jamaica	Tonic, in intermittents and dyspepsia	gr. v. to ʒ ss.	Inf. Quassiæ
Quercus Cortex	Sp. 65. Quercus Pedunculata	Common oak bark	Cl. 21. Ord. 6. Monœcia Polyandria N. O. Amentaceæ	Indigenous	Astringent and tonic, given in intermittents, diarrhœa, &c.	gr. x. to ʒ ss.	Dec. Quercûs
Resina Flava	Sp. 1. Pinus Sylvestris	Yellow resin is the residue of the distillation of Ol. Terebinth.	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Coniferæ	North Europe	Stimulant, used externally in ointments and plasters	....	Empl. Ceræ Cerat. Resinæ Empl. Picis. c. — Resinæ Ung. Picis aridæ

Rhamni Baccæ	Sp. 1. Rhamnus Catharticus	Purging Buckthorn berries	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Dumosæ	Indigenous	Purgative in dropsies	ʒj. to ʒij.	Syr. Rhamni
Rhei Radix	Sp. 3. Rheum Palmatum	Palmated Rhubarb root. The best comes by Russia	Cl. 9. Ord. 3. Enneandria Trigynia N. O. Holoraceæ	China, Tartary	Purgative, astringent, and stomachic, according to the dose, given in dyspepsia, diarrhœa, &c.	gr. x. to ʒ ss.	Inf. Rhei Tinct. do. —— comp. Extr. Rhei
Rhœados Petala	Sp. 5. Papaver Rhœas	Red Poppy petals	Cl. 13. Ord. 1. Polyandria Monogynia N. O. Rhœadeæ	Indigenous	Used for its colour only	....	Syr. Rhœados
Ricini Oleum et Semina	Sp. 1. Ricinus Communis	The expressed oil of the seeds of Palma Christi	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Tricoccæ	East and West Indies	Mildly cathartic; given in piles, dysentery, &c.	ʒ iv. to ℥iss.	....

Rosæ Caninæ Pulpa	Sp. 31. Rosa Canina	Dog rose	Cl. 12. Ord. 5. Icosandria Polygynia N. O. Senticosæ	Indigenous	Cooling and laxative for children	ad libitum	Conf. Rosæ c.
Rosæ Centifoliæ Petala	Sp. 15. RosaCentifolia	Hundred-leaved rose	…………	Europe	Laxative	℈j. to ʒj.	Aq. Rosæ Syr. do.
Rosæ Gallicæ Petala	Sp. 16. Rosa Gallica	Red rose	…………	………	Astringent in hæmorrhages	℈j. to ʒj.	Conf. Rosæ G. Inf. do. Mel Rosæ
Rosmarini Cacumina	Sp. 1. Rosmarinus Officinalis	Officinal rosemary	Cl. 2. Ord. 1. Diandria Monogynia N. O. Verticillatæ	South of Europe	Tonic, emmenagogue, and stimulant, in hysteria, chlorosis, &c.	gr. x. to ʒss. of the powder	Ol. Rosm. Sp. do. Lin. Sapon. c.
Rubiæ Radix	Sp. 1. Rubia Tinctorum	Dyer's madder	Cl. 4. Ord. 1. Tetrandria Monogynia N. O. Stellatæ	South Europe	Emmenagogue and astringent	ʒss. to ʒj.	…………
Rutæ Folia	Sp. 1. Ruta Graveolens	Common rue	Cl. 10. Ord. 1. Decandria Monogynia N. O. Multisiliquæ	South Europe	Tonic, emmenagogue, and stimulant; given in hysteria and colic	gr. x. to ʒss.	Ol. Rutæ Conf. do.

Sabinæ Folia	Sp. 6. Juniperus Sabina	Savine leaves	Cl. 22. Ord. 13. Diœcia Monadelphia N. O. Coniferæ	South Europe	Emmenagogue, given in amenorrhœa and chlorosis	gr. v. to gr. x.	Cerat. Sabinæ
Saccharum Saccharum Purificatum	Sp. 4. Saccharum Officinarum	Sugar cane	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	East and West Indies	To sweeten other medicines	....	Syrupi omnes
Sagapenum	Unknown	Gum Sagapenum	....	Smyrna, Aleppo	Antispasmodic and emmenagogue	gr. x. to ʒ ss.	Pil. Galb. c.
Salicis Cortex	Sp. 101. Salix Caprea	Round-leaved willow bark	Cl. 22. Ord. 2. Diœcia Diandria N. O. Amentaceæ	Indigenous	Tonic and astringent, given in intermittents*	gr. x. to ʒ ss.	....
Sambuci Flores	Sp. 3. Sambucus Nigra	Elder flowers	Cl. 5. Ord. 3. Pentandria Trigynia N. O. Dumosæ	Indigenous	Diaphoretic, used in fomentations	....	Ung. Sambuci

---

* Incompat. isinglass, alkaline carbonates, liq. calcis, and ferri sulphas.

Sapo Durus	Sapo ex Olivæ Oleo et Sodâ confectus	Spanish soap	....	....	Laxative and lithontriptic	gr. v. to ʒ ss.	Cerat. Sap. Emp. Sapon Lin. do. c.
Sapo Mollis	Sapo ex Oleo et Potassâ confectus	Soft soap	....	....	Not used internally	....	Pil. Sap.c.Opio — Aloes c. — Camb. c. — Scillæ. c.
Sarsaparillæ Radix	Sp. 9. Smilax Sarsaparilla	Sarsaparilla root	Cl. 12. Ord. 6. Diœcia Hexandria N. O. Sarmentaceæ	South America	Demulcent and diuretic; given in cutaneous diseases and pseudo-syphilis	℈j. to ʒj.	Dec. Sars. ——— c. Extr. Sarsap.
Sassafras Lignum et Radix	Sp. 34. Laurus Sassafras	Sassafras chips and root	Cl. 9. Ord. 1. Enneandria Monogynia N. O. Oleraceæ	North America, China	Stimulant and sudorific; given in chronic rheumatism, gout, &c.	℈j. to ʒj.	Ol. Sass. Dec. Sarsap. c. — Guaiaci
Scammoneæ Gummi Resina	Sp. 4. Convolvulus Scammonia	Scammony is the concrete juice of the root, obtained by incisions	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Campanaceæ	Aleppo, &c.	Drastic purgative, given in costiveness and worm cases	gr. v. to ℈j.	Conf. Scam. Pulv. Scam. c. Extr. Col. c. Pulv. Sennæ c.

Scillæ Radix	Sp. 1. Scilla Maritima	Officinal Squill, the bulb	Cl. 6. Ord. 1. Hexandria Monogynia N. O. Coronariæ	Spain, &c.	Expectorant and diuretic, given in dropsies, catarrh, and asthma	gr. j. to gr. iij.	Acet. Scillæ Oxym. do. Pil. do. c. Tinct. do.
Secale cornutum	Sp. Secale cornutum	Ergot of rye, a parasitical fungus	Cl. 3. Ord. 2. Triandria Digynia N. O. Gramina	Indigenous	In protracted labour, depending on debility or atony of the uterus	Pulv. gr. v. to gr. xv. every ¼ of an hour, till the effect be produced.	....
Senegæ Radix	Sp. 67. Polygala Senega	Seneka root	Cl. 17. Ord. 3. Diadelphia Octandria N. O. Lomentaceæ	North America	Tonic and expectorant, given in asthma and catarrh	℈j. to ℈ij. or of the decoction ℥iss.	Dec. Senegæ
Sennæ Folia	Sp. 24. Cassia Senna	Senna. An inferior kind, with larger leaves, comes from the East Indies	Cl. 10. Ord. 1. Decandria Monogynia N. O. Lomentaceæ	Alexandria	Purgative, in all cases requiring evacuations	℈j. to ʒj.	Conf. Sennæ Inf. do. Tr. do. Syr. do. Pulv. do. c.

Serpentariæ Radix	Sp. 27. Aristolochia Serpentaria	Virginia snake root	Cl. 20. Ord. 4. Gynandria Hexandria N. O. Sarmentaceæ	North America	Stimulant and diaphoretic, given in typhoid fevers and exanthemata	gr. x. to ʒ ss.	Tinct. Serp.
Sevum	Sp. 1. Ovis Aries	The fat of the sheep, or mutton suet	Cl. 1. Ord. 5. Mammalia Ruminantia	....	Used for ointments	....	Empl. Ceræ Ung. Hyd. fort. — Pic. liq.
Simaroubæ Cortex	Sp. 2. Quassia Simarouba	Simarouba bark	Cl. 10. Ord. 1. Decandria Monogynia N. O. Gruinales	South America	Tonic, in intermittents, chronic diarrhœa, and dyspepsia	gr. x. to ʒ ss. or in infusion	Inf. Simaroub.
Sinapis Semina	Sp. 5. Sinapis Nigra	Mustard seed	Cl. 15. Ord. 2. Tetradynamia Siliquosæ N. O. Siliquosæ	Indigenous	Stimulant, emetic, and rubefacient; given in dyspepsia, apoplexy, and applied as a cataplasm to the feet	℈j. to ʒss.	Catapl. Sinapis Inf. Arm. c.
Sodæ Murias	Murias Sodæ	Common salt is obtained from sea-water or salt-mines	....	....	Tonic and laxative, given in dyspepsia as a detergent	℈j. to ʒj.	....

Sodæ Subboras	Subboras Sodæ	Borax, found native in India and Thibet	…………	………	Used in aphthæ of children	gr. x. to ʒ ss.	Mel. Boracis
Sodæ Sulphas	Sulphas Sodæ	Sulphate of Soda	…………	………	Purgative, in fevers	ʒ ij. to ℥j.	…………
Soda Impura	Subcarbonas Sodæ Impura	Impure Sub-Carbonate*	…………	………	…………	………	…………
Spartii Cacumina	Sp. Spartium Scoparium	Common broom	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	Indigenous	Diuretic, in dropsies	℈j. to ʒj.	…………
Spigeliæ Radix	Sp. 2. Spigelia Marilandica	Wormgrass root	Cl. 5 Ord. 1. Pentandria Monogynia N. O. Stellatæ	North America	Anthelmintic, given in cases of lumbrici	gr. x. to ʒj. of the powdered root	…………
Spiritus Rectificatus	Sp. gr. .835	………	…………	………	Stimulant, in lotions; used to make all tinctures and spirits	………	…………
Spiritus tenuior	Sp. gr. .930						

---

* Is obtained by the combustion of salsola soda, and called barilla; another variety, named kelp, is produced by burning various species of sea-weed, particularly the fucus vesiculosus.

Spongia	Sp. 8. Spongia Officinalis	....	Cl. 6. Ord. 4. Vèrmes Zoophyta	Red Sea and Mediterranean	Used externally	....	....
Spongia usta	Spongia usta	Burnt Sponge. Its active principle is Iodine[*]	....	....	Tonic and deobstruent, scrofula, and bronchocele	ʒ i. to ʒ ij.	....
Stannum	Stanni Limatura	Tin filings	....	....	In worms and vermifuge	ʒ j. to ʒ iv.	....
Staphisagria Semina	Sp. 13. Delphinium Staphisagria	Staves-acre seeds	Cl. 13. Ord. 3. Polyandria Trigynia N. O. Multisiliquæ	South of Europe	Cathartic, used as a powder to destroy pediculi	gr. iij. to gr. x.	....
Stramonii, Semina et Folia	Sp. 2. Datura Stramonium	Thorn apple seeds and leaves	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Solanaceæ	America	Narcotic and stimulant; given in mania, epilepsy, and asthma	gr. ss. to gr. ij. of the extract	Extr. Stram.

[*] Iodine is usually obtained from sea-weeds. It is supposed to be an elementary body, solid at the ordinary temperature of the atmosphere, possessing a metallic appearance. If heated to about eighty degrees, it gives out a violet vapour, from which its name has been derived. It supports combustion, renders vegetable colours yellow, and forms a blue compound with starch.

Iodine unites with hydrogen, forming a colourless gaseous acid, the hydriodic acid, which, uniting with different bases, forms the salts called hydriodates.

Styracis Balsamum	Sp. 1. Styrax Officinale	Officinal storax	Cl. 10. Ord. 1. Decandria Monogynia N. O. Bicornes	South Europe, Levant	Stimulant and expectorant, in asthma, &c.	gr. x. to ʒ ss.	T. Benz. c.
Succinum	....	Amber	....	Baltic	To make the oil and acid	....	Ol. Succin.
Sulphur	....	To make the sublimed sulphur	....	....	....	....	....
Sulphur Sublimatum	....	Obtained by sublimation	....	....	Laxative, in piles, itch, and chronic rheumatism	ʒ ss. to ʒj.	Ung. Sulph. Ol. do.
Tabaci Folia	Sp. 1. Nicotiana Tabacum	Tobacco leaves	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Luridæ	North America	Narcotic, emetic, sedative, cathartic, and in injection; scarcely ever given by the mouth; used in cases of hernia.	gr. ss. to gr. v.	Inf. Tabaci
Tamarindi Pulpa	Sp. 1. Tamarindus Indicus	Tamarinds	Cl. 16. Ord. 1. Monadelphia Triandria N. O. Lomentaceæ	East and West Indies	Laxative, in fevers	Ad libitum	....

Taraxaci Radix	Sp. 1. Leontodon Taraxicum	Dandelion root	Cl. 19. Ord. 1. Syngenesia Æqualis N. O. Compositæ Semiflosulosæ	Indigenous	Diuretic, given in dropsy and jaundice	ʒ ss. to ʒj.	Extr. Taraxici
Tartarum	Potassæ Supertartras Impura	Tartar is found incrusted in wine casks	…………	………	Used to make cream of tartar	………	Pot. Supert.
Terebinthina Canadensis	Sp. 27. Pinus Balsamea	Canada Turpentine, or Balsam	Cl. 21. Ord. 8. Monœcia Monadelphia N. O. Coniferæ	North America	Stimulant, diuretic, in gleets, leucorrhœa, &c.	℈j. to ʒj.	
Terebinthina Chia	Sp. 4. Pistachia Terebinthus	Chian Turpentine tree	Cl. 22. Ord. 5. Diœcia Pentandria N. O. Amentaceæ	Barbary, South Europe			
Terebinthina Vulgaris	Sp. 1. Pinus Sylvestris	Scotch Fir	Ut supra	North Europe			
Terebinthinæ Oleum	………	Obtained by distillation from the raw turpentine of the Pinus Sylvestris	…………	………	Anthelmintic, given in tænia and hæmorrhages	gtt. x. to ℥ ss.	Lin. Terebinth

Testæ	Ostrea edulis	Oyster-shells	Cl. 6. Ord. 3. Vermes Testacea	....	....	....	....
Tiglii Oleum	Sp. Croton Tiglium	Oil of Tiglium	Cl. 21. Ord. 8 Monœcia Monadelphia N. O. Tricoccæ	East Indies	A drastic purgative, given in mania, apoplexy, and tetanus	gtt. j. to iij.	....
Tormentillæ Radix	Sp. Tormentilla Officinalis	Tormentil root or Septfoil	Cl. 12. Ord. 5. Icosandria Polygynia N. O. Senticosæ	Indigenous	Astringent, in diarrhœa	gr. x. to ʒ ss.	P. Cret. c.
Toxicodendri Folia	Sp. 17. Rhus Toxicodendron	Sumach leaves	Cl. 5. Ord. 2. Pentandria Digynia N. O. Dumosæ	North America	Stimulant and narcotic; given in paralysis and herpes	gr. ij. to gr. vj.	....
Tragacantha	Sp. Astragalus verus	Gum Tragacanth, a natural exudation	Cl. 17. Ord. 4. Diadelphia Decandria N. O. Papilionaceæ	North Persia	Demulcent, in coughs	gr. x. to ʒ ss.	P. Trag. c.

Tussilago	Sp. 12. Tussilago Farfara	Coltsfoot	Cl. 19. Ord. 2. Syngenesia Superflua N. O. CompositæDiscoideæ	Indigenous	Demulcent and expectorant, in coughs, asthma, and phthisis	ʒ ss. to ʒ j.	…………
Valerianæ Radix	Sp. 6. Valeriana Officinalis (sylvestris)	Wild Valerian root	Cl. 3. Ord. 1. Triandria Monogynia N. O. Aggregatæ	Indigenous	Antispasmodic, in hysteria, and epilepsy. Incompatibles, salts of iron	℈ j. to ℈ ij.	Tinct. Val. ——— Amm.
Veratri Radix	Sp. 1. Veratrum Album	White Hellebore root. Its active principle is *veratrine*	Cl. 23. Ord. 1. Polygamia Monœcia N. O. Coronariæ	Greece, Italy, &c.	Errhine, in amaurosis, emetic, and purgative	gr. ij. to gr. v., snuffed up the nose	Dec. Veratri Ung. do. — Sulph. c.
Ulmi Cortex	Sp. 1. Ulmus Campestris	Elm-tree bark	Cl. 5. Ord, 2. Pentandria Digynia N. O. Scabridæ	Indigenous	Tonic and alterative, in cutaneous affections.	℈ i. to ʒi.	Dec. Ulmi

Uvæ passæ	Sp. 1. Vitis Vinifera	Raisins	Cl. 5. Ord. 1. Pentandria Monogynia N. O. Hederaceæ	South Europe	Demulcent, nutrient, and aperient	....	Tr. Sennæ
Uvæ Ursi Folia	Sp. 7. Arbutus Uva Ursi	Leaves of Bearberry, or Trailing Arbutus	Cl. 10. Ord. 1. Decandria Monogynia N. O. Bicornes	North Europe	Tonic and astringent, given in diseases of the kidneys and bladder	gr. x. to ʒj.	Dec. Uvæ. Ursi
Zincum	....	Zinc	....	....	Used to make the sulphate	....	Zinci Sulph.
Zingiber Radix	Sp. 1. Zingiber Officinale	Ginger root	Cl. 1. Ord. 1. Monandria Monogynia N. O. Scitamineæ	East Indies	Stimulant, in dyspepsia	gr. v. to ʒ ss.	Zinci Sulph. Syr. Zing. Tr. Zingib.

TABLE,

Shewing the proportion in which Opium, and certain preparations of Antimony, Arsenic, and Mercury, are contained in some compounds.

OPIUM.

Confectio Opii.—36 grains contain one grain of opium.

Pil. Saponis cum Opio.—Five grains contain one grain of opium.

Pulvis Cornu Usti cum Opio.—Ten grains contain one grain of opium.

Pulvis Cretæ compositus cum Opio.—Two scruples contain one grain of opium.

Pulvis Ipecacuanhæ compositus.—Ten grains contain one grain of opium.

Pulvis Kino compositus.—One scruple contains one grain of opium.

Tinctura Opii.—19 minims contain about one grain of opium.

Tinctura Camphoræ composita.—Four fluid drachms contain nearly one grain of opium.

ANTIMONY.

Liq. Antimonii Tartarizati.—One fluid ounce contains two grains of tartarized antimony.

MERCURY.

Hydrargyrum cum Cretâ.—Three grains contain one grain of mercury.

Liquor Hydrargyri Oxymuriatis.—An ounce contains half a grain of the oxymuriate of mercury.

Linimentum Hydrargyri.—Six drachms contain one drachm of mercury.

Pilula Hydrargyri.—Three grains contain one grain of mercury.

Pilula Hydrargyri submuriatis composita.—Four grains contain about one grain of the submuriate of mercury.

Unguentum Hydrargyri Fortius. — Two drachms contain one drachm of mercury.

Unguentum Hydrargyri mitius.—Six drachms contain one drachm of mercury.

ARSENIC.

Liquor Arsenicalis.—Two fluid drachms contain one grain of the oxide of arsenic.

ANATOMY.

BRIEF DESCRIPTION OF THE VISCERA, &c.

1. The viscera of the body, are parts circumscribed, highly vascular, and destined to the support of animal life.

2. The viscera consist of those of the *cranium*, *thorax*, *abdomen*, and *pelvis*.

3. The cranium is formed by eight bones, six proper, and two common to it, and the face. The six proper are the *os frontis*, *os occipitis*, *two ossa parietalia*, and *two ossa temporum ;* the two common are the *os ethmoides*, and *os sphenoides*.

4. The contents of the cranial cavity are the *brain*, with its *vessels*, *membranes*, and *nerves*.

5. The membranes are three in number: the *dura mater*, *tunica arachnoidea*, and *pia mater*.

6. The *dura mater* is a tough fibro-serous membrane, composed of two layers: the outer one has a villous appearance, and forms the internal periosteum ; the inner layer is smooth, and immediately covers the tunica arachnoidea.

7. On the outer surface of the dura mater

are seen some little granular flesh-looking bodies, called *glandulæ Pacchioni.*

8. The two layers of the dura mater separate in some parts, leaving spaces, partly triangular, called sinuses, the principal of which are the *superior* and *inferior longitudinal*, the *two lateral*, the *torcular Herophili*, or *fourth sinus*, and the *sphenoidal sinuses.*

Little fibrous chords are stretched across the superior longitudinal sinus, called the *chordæ Willisii.*

9. The inner layer of the dura mater forms folds or processes, which dip down and separate the different parts of the brain; they are the *falx cerebri*, *tentorium*, and *falx cerebelli.*

10. The *falx cerebri* extends from the crista galli, following the course of the sagittal suture, to the back part of the skull, where it unites with the tentorium. It divides the cerebrum into two portions, called hemispheres. The separation of its folds superiorly forms the superior longitudinal sinus.

11. The *tentorium* extends across the back part of the cranium, between the cerebrum and cerebellum; its folds form, by their separation, the lateral sinuses.

12. The *falx cerebelli* extends from the tentorium to the foramen magnum, along the spine of the occipital bone, to the margin of the foramen magnum.

13. The arteries of the dura mater are the

anterior, *middle*, and *posterior meningeal.* The first, are branches of the ophthalmic, the middle are given off from the internal maxillary artery, and the posterior from the occipital arteries.

14. The *pia mater* is a thin delicate membrane, extremely vascular, composed of lamellæ of cellular tissue. It immediately invests the brain, dips down into the convolutions, and sends an elongated portion into the lateral ventricles, forming the *choroid plexuses.*

15. The *tunica arachnoidea* is a delicate serous membrane, investing the brain, and lining the dura mater, in a similar manner to the pleura investing the lungs and lining the ribs, forming a shut sack. It lines the lateral ventricles and under surface of the velum interpositum.

THE BRAIN.

16. The brain is divided into *cerebrum*, *cerebellum*, and *medulla oblongata.*

17. The *cerebrum* occupies the upper and larger portion of the cranium. It is divided by the falx major into two *hemispheres*; and each hemisphere is divided into three lobes, the anterior, middle, and posterior, the two former being separated, inferiorly, by a depression, named *fissura sylvii.*

18. The brain is of a greyish brown colour, externally; its surface is divided by deep fissures, producing convex ridges, called *convolu-*

tions, which are connected to the pia mater by small filaments and vessels, and to these Ruysch has applied the term *tomentum cerebri.*

19. The external grey surface of the brain is called cortical, or *cineritious;* the internal white substance is named *medullary.*

20. On separating the hemispheres of the cerebrum, the *corpus callosum* is brought into view. It is a portion of medullary substance, extending transversely and horizontally from the inside of each hemisphere. Its upper surface is convex; a furrow, called raphè, runs along its centre, on the side of which are transverse streaks, named *lineæ transversæ.* The anterior cerebral arteries pass between the raphè and lineæ transversæ.

21. After slicing away the substance of either hemisphere, to a level with the corpus callosum, a medullary portion is left, of an oval form, called *centrum ovale.*

22. Beneath the corpus callosum and centrum ovale is situated a *lateral ventricle,* on each side.

23. The proper ventricles are four in number, communicating with each other; they are lined by tunica arachnoidea, and are moistened by a fluid secreted in them.

24. The lateral ventricles are said to resemble a ram's horn in their form; they extend from the anterior lobes, in a parallel direction, to the posterior part, where they bend downwards, forwards, and inwards.

25. The anterior part forms the *anterior*

cornu, an elongated part extending into the posterior lobe, forms the *posterior cornu*, or *digital cavity*. The inferior descending portion is called the *inferior* or *descending cornu*, and terminates in the lateral lobes of the brain.

26. The parts first seen in the lateral ventricles, forming the floor, are the *corpora striata, tænia semicircularis*, and *thalamus opticus*.

27. The *corpora striata* are greyish pyriform bodies, situated at the anterior part of the ventricle; they are rounded and largest in front.

28. The *thalami optici* are white convex bodies situated behind them, connected together by a small portion of medullary matter, called *commissura mollis*.

29. The thin flattened band of white substance seen between the thalamus opticus and corpus striatum is named *tænia semicircularis*.

30. The ventricles are separated from each other by a thin membrane, named *septum lucidum*, attached above to the corpus callosum, and below to the fornix; it is composed of two medullary layers, the space between which is the *fifth ventricle*.

31. The *fornix* is continued from the septum lucidum, commencing, in front, by two rounded cords, called anterior pillars, or crura, which terminate in the corpora albicantia. The union of these crura forms the body of the fornix, which is divided, posteriorly, into two crura, and they terminate in the *hippocampi majores*.

32. The under surface of the body of the

fornix is marked with longitudinal lines, forming what is called *psalterium*, or *lyra*.

33. The anterior thin edge of the posterior crura extends into the ventricles, and is named *corpus fimbriatum*, or *tænia hippocampi*.

34. The posterior edge is connected with the floor of the posterior cornu, or digital cavity.

35. The floor of the digital cavity is formed by the *hippocampus minor*.

36. The floor of the inferior cornu is formed by the hippocampus major, a projection of medullary substance, terminating in four or five prominences, resembling the foot of an animal, and hence called *pes hippocampi*.

37. There is a little opening at each side of the edge of the anterior extremity of the fornix, called the *foramen of Monro*. Each foramen leads down to the third ventricle, communicating through the *foramen commune anterius*.

38. Lying on the thalamus opticus of each side is seen the choroid plexus.

39. The *choroid plexuses* are vascular, plexiform, membranous bodies, extending from the foramina of Monro, over the thalami optici, to the termination of the ventricles. The veins of each plexus unite and form the *vena Galeni*, which empties itself into the torcular herophili.

40. Beneath the fornix is situated the *velum interpositum*, forming the roof of the third ventricle.

41. Behind the thalami and third ventricle, and beneath the velum, is situated the *pineal*

gland, connected to the thalami by two peduncles; and inferiorly to it, the *corpora quadrigemina.*

42. The two highest eminences of the corpora quadrigemina are called *nates;* the posterior inferior are named *testes.*

43. There is a little fissure between their upper surface and the corpus callosum, called the *fissure of Bichat*, which admits the passage of the arachnoid membrane into the ventricles.

44. The *third ventricle* is a deep fissure, bounded, laterally, by the thalami optici; superiorly, by the velum; inferiorly, by the pons tarini and tuber cinereum; anteriorly, by the anterior commissure and anterior crura of the fornix; and posteriorly, by the pineal gland and posterior commissure.

45. The *anterior commissure* is a medullary band, uniting the corpora striata, in front of the anterior crura of the fornix.

46. The posterior commissure is situated at the back part, and at the base of the pineal gland.

47. The *third ventricle* terminates anteriorly in the *foramen commune anterius.*

48. The posterior termination is called *foramen commune posterius.*

49. There is an opening, leading downwards and forwards, from the foramen commune anterius to the infundibulum, called *iter ad infundibulum.*

50. The *infundibulum* is a conical body of cineritious and medullary substance, extending

from the anterior and inferior part of the third ventricle to the pituitary gland.

51. The pituitary gland is of an oval form, and of a brownish colour, externally. It is situated in the sella turcica of the sphenoid bone.

52. There is a passage below the posterior commissure of the third ventricle, leading down to the fourth ventricle, named *iter a tertio ad quartum ventriculum, canalis medius,* or *aquæductus sylvii.*

53. The parts seen at the base of the cerebrum are, the *commissure of the optic nerves,* the *tuber cinereum,* a stratum of grey matter, giving out the *infundibulum,* connected with the commissure and corpora albicantia.

54. The *corpora albicantia,* or *eminentiæ mammillares,* are situated behind the tuber cinereum, and are connected together.

55. Behind them is a thin medullary layer, called *pons tarini,* or *locus perforatus.*

56. The *crura cerebri* are two thick cords, arising from the medullary substance of the cerebrum; they converge and unite in the pons varolii.

57. They are of a dark colour internally; this part is named *locus niger.*

CEREBELLUM.

58. The *cerebellum* is situated beneath the posterior part of the cerebrum, and separated from it by the tentorium.

59. It is divided into two lobes, by a fissure principally occupied by the falx minor.

60. The *cerebellum* is composed of cineritious and medullary matter, forming, by their internal arrangement, that appearance termed *arbor vitæ.*

61. An oval nucleus of grey substance is found in the medullary part, and, from its border being notched, is named *corpus dentatum* or *rhomboideum.*

62. The surface of the cerebellum is not convoluted, as the cerebrum, but formed into *lamellæ,* with *sulci* or grooves between them.

63. There are two *vermiform appendages* observed on it; they have the appearance of rounded central ridges, situated superiorly and inferiorly.

64. Two large cords arise from the cerebellum, named *crura cerebelli,* which, by uniting with the crura cerebri, appear to form the pons varolii.

65. Between the cerebellum and medulla oblongata is a cavity running downwards and backwards; it is called the *fourth ventricle.*

66. It is bounded above by the valve of Vieussens; in front, by the medulla oblongata; behind, by the cerebellum; and below, by a process of arachnoid membrane.

67. It has a communication above with the third ventricle, by the *canalis medius.*

68. A fissure is observed at the anterior part of the fourth ventricle, called *calamus scriptorius,* from its pen-like form.

69. The *pons varolii,* formed by the union of the crura cerebri and crura cerebelli, is continuous with the medulla oblongata.

70. A shallow groove is observed along its centre, which is caused by the passage of the basilar artery.

71. There is a depression in the centre of the groove which divides the pons varolii and medulla oblongata, called *foramen cæcum.*

72. The medulla oblongata is the substance situated between the pons varolii and medulla spinalis. It presents four eminences on its anterior part; the two internal ones are called *corpora pyramidalia,* the two external, *corpora olivaria.*

73. The *medulla spinalis* is that medullary substance which commences at the medulla oblongata; it descends through the foramen magnum, down the spine, and terminates at about the third lumbar vertebra in the cauda equina.

74. It is composed of medullary matter externally, and cineritious matter internally. It is covered by a continuation of the three membranes of the brain.

75. The *arteries* of the *brain* are from the two *carotid* and *vertebral arteries.*

76. The internal carotid artery gives off within the cranium, the *ophthalmic* and the posterior *communicating branches,* and then is divided into *anterior* and the *middle cerebral* arteries.

77. The vertebral arteries enter the skull through the foramen magnum, and unite on the

basilar process, to form the ***basilar artery***, which gives off the superior artery of the cerebellum, and divides into the posterior cerebral arteries, called *profundæ cerebri*, which are distributed upon the posterior lobe.

78. There is a communication between the branches of the internal carotids and basilar arteries, forming an arterious circle, called the *circle of Willis*, which surrounds the tractus optici, the union of the optic nerves, the infundibulum, corpora albicantia, and pons tarini.

79. The veins terminate in the various sinuses, which empty themselves into the internal jugular veins.

NERVES.

80. The nerves are white medullary chords, necessary to sensation.

81. They are composed of very fine filaments called *nervous fibres*, and each fibre is composed of an envelope called *neurilema*, and a central pulp of medullary substance.

82. Every nerve has two extremities, one communicating with the brain or spinal chord, called its origin; the other distributed to some of the organs or parts of the body, called the termination.

83. They thus form a communication between objects and the brain, and convey to it the various impressions which constitute the senses.

84. Nerves communicate with each other in various places, forming what are termed plexuses.

85. Some nerves have enlarged parts on them called ganglions, differing in structure from the nerves themselves; their precise use is unknown.

86. The nerves arise either from the brain or spinal marrow, and are, for this reason, divided into *cerebral* and *spinal nerves.*

CEREBRAL NERVES.

87. The cerebral nerves are generally described as nine pairs.

88. The first pair, or *olfactory*, arise from the corpora striata and under surface of the anterior lobe of the cerebrum; they perforate the ethmoid bone, and are distributed upon the pituitary membrane of the nose.

89. The second pair, called *optic*, arise from the nates and thalami optici; they first converge and unite in front of the sella turcica, then diverge and separate, passing through the foramina optica, and perforate the sclerotica, to be expanded into the retina.

90. The third pair, or *motores oculorum*, arise from the crura cerebri, pass through the foramen lacerum of the sphenoid bone, and are distributed to the muscles of the eye. This pair gives off a filament to the ophthalmic ganglion.

91. The fourth pair, or *pathetici*, arise from the valve of the fourth ventricle, immediately beneath the tubercula quadrigemina; they pass through the foramen lacerum, and are distri-

buted to the trochlearis or superior oblique muscle of the eye. They are the smallest of the cerebral nerves.

92. The fifth pair or *trigemini* arise from the crura cerebelli and tuber annulare, by numerous filaments, forming two fasciculi, which perforate the dura mater; the anterior forms, in the cavernous sinus, the gasserian plexus, which gives off three branches; the posterior constitutes the muscular branch of the inferior maxillary nerve. The branches of this pair are

93. i. The *ophthalmic,* which divides into three branches; the supra orbitar, the lachrymal, and the nasal branches. The first supplies the forehead and inner corner of the orbit, the lachrymal is distributed to the lachrymal gland and upper eyelid, and the nasal to the nose and inside of the orbit.

94. ii, The *superior maxillary* nerve passes out at the foramen rotundum; in the pterygoid fossa it gives off filaments, which form a plexus, and this plexus gives out three sets of nerves:

1. Spheno-palatine or nasal, to the pituitary membrane.
2. Palatine, to the membrane of the palate and gums, tonsils, velum palati, and uvula.
3. The vidian divides into two branches; the first is continued into the aqueduct of Fallopius, and joins the facial nerve; the carotid branch goes into the carotid canal, and joins the sympathetic.

The superior maxillary nerve then passes along the infraorbitar canal, and, when it emerges, divides into numerous filaments, distributed to the under eyelid, ala nasi, upper lip, muscles, and integuments, communicating with the portio dura.

95. iii. The *inferior maxillary* passes through the foramen ovale, and gives off the following branches:

1. The masseteric branch to the masseter muscle.
2. The temporal nerves to the temporal muscle.
3. The buccinator nerve to the buccinator muscle.

4. Pterygoid nerve to the internal pterygoid muscle.

5. Auricular to the ear, communicating with the portio dura and occipital branches of the second cervical.

6. The dental nerve, distributed to the teeth of the lower jaw, and to the chin and face.

7. The gustatory nerve to the membrane and papillæ of the tongue, forming the sense of taste. This nerve receives the chorda tympani, and gives off filaments to the sublingual and submaxillary glands, to the lining membrane of the mouth, and to the hypoglossal nerve.

96. The sixth pair, or *abducentes*, arise from the junction of the tuber annulare with the medulla oblongata, pass through the foramen lacerum, giving filaments to the sympathetic, and are distributed to the abductor muscle of the eye.

67. The seventh pair consists of two portions, the *portio dura* and *portio mollis*.

The *portio dura* arises from the posterior and lateral parts of the pons varolii; it passes along the inner meatus in a depression of the portio mollis, then enters the canal of Fallopius, where it receives the petrous branch of the vidian nerve, and gives off twigs to the tympanum, and a considerable branch, named chorda tympani, which traverses the tympanum, and, emerging at the Glycerian fissure, passes down the ramus of the lower jaw, to join with the gustatory nerve.

The facial nerve emerges from the stylo-mastoid foramen, and enters the parotid gland, where it forms a plexus named *pes anserinus*, from which branches are given off to the head, neck, cheeks, lips, and chin, and branches communicating with the supra-orbitar, infra-orbitar, buccinator, and upper cervical nerves.

98. The *portio mollis* arises from the anterior part of the fourth ventricle; it enters the meatus auditorius internus, passes into the labyrinth, and divides into minute filaments, which form two fasciculi; the anterior go to the cochlea, the posterior to the vestibule and semicircular canals.

99. The eighth pair consists of three nerves:

i. The *glosso-pharyngeus* arises from the side of the medulla oblongata, passes out at the foramen lacerum basis cranii, where it gives off filaments anastomosing with the vidian sympathetic pneumo-gastric and accessory nerves, and is distributed to the pharynx, tongue, &c.

ii. The *par vagum*, or *pneumo-gastric* nerve, arises from the side of the medulla oblongata, and emerges with the glosso-pharyngens, going down the neck at the outside, and rather behind the common carotid artery. It gives off a branch, named pharyngeus, and another, named laryngeus, and then enters the thorax, passing behind the subclavian artery, on the right side, and over the arch of the aorta, on the left; it then passes behind the roots of the bronchi, along the œsophagus, to the stomach and viscera.

iii. *Nervus accessorius* arises lower down the side of the medulla oblongata; it passes out at the foramen lacerum, behind the internal jugular vein, and is distributed to the trapezius muscle.

100. The ninth pair, or *hypoglossal* or *lingual*, arises from between the junction of the corpora olivaria and corpora pyramidalia, and is distributed to the muscles of the tongue.

101. The spinal nerves consist of thirty pairs: eight cervical, twelve dorsal, five lumbar, and six sacral nerves.

102. They arise by two fasciculi: those from the front give the power of motion; those from behind give sensation: they pass through the dura mater, then unite and perforate the lateral foramina of the vertebral canal. A ganglion is formed on the posterior fasciculus, before the union.

103. The *phrenic* nerve is formed by filaments from the third, fourth, and fifth cervical nerves.

SYMPATHETIC NERVE.

104. The sympathetic nerve extends on each side from the cranium to the pelvis, forming several ganglia, connected together by filaments. Each nerve consists of three *cervical* ganglia, twelve *dorsal*, five *lumbar*, and four *sacral;* and besides these, according to Cloquet, in the cranium the lenticular and spheno-palatine ganglia, and one upon the arteria communicans.

105. It is by some described as commencing by the union of a branch of the sixth, with a

reflected branch of the second division of the fifth pair of cerebral nerves.

106. The *superior cervical ganglion* extends from just below the foramen magnum to the third cervical vertebra; it gives out several branches, which anastomose and form plexuses about the neck and face, and one to form the *superficialis cordis.*

107. The *middle cervical ganglion* is found on a level with the fifth cervical vertebræ, giving filaments to the recurrent nerve, some to the thyroid gland, and, from its fore part, gives out the middle cardiac nerves.

108. The *inferior cervical ganglion* is situated near the junction of the last cervical vertebra and first rib; it gives off the inferior cardiac nerve.

109. The thoracic ganglia lie on the heads of the ribs, connected together by filaments. The first five give out filaments which ramify on the trachea, œsophagus, and aorta, and assist in forming the pulmonary plexus. Anterior branches, from the sixth to the ninth, unite into a trunk, named splanchnicus major, which terminates in the semilunar ganglion. Branches from the tenth and eleventh unite and form the splanchnicus minor, which pierces the diaphragm, gives branches to the larger nerve, and terminates in the renal plexus. The nerves in the abdomen consist in the semilunar ganglia, the fibres of which, together with lumbar branches and filaments from the par vagum and phrenic

nerve, form the solar plexus, around the root of the cardiac artery. From this plexus filaments are given off, which anastomose around and accompany the vessels of the neighbouring parts, from which they also receive their names, such as the *right* and *left hepatic*, *coronary*, *splenic*, and *mesenteric*.

110. The *renal plexus* is formed by the lesser splanchnic and filaments from the solar plexus; it gives out filaments which descend to the testis and ovarium; other plexuses are formed about the loins and pelvis, which are named according to their distribution.

111. The lenticular ganglion is situated on the outside of the optic nerve, in the back part of the orbit. It receives filaments from the third pair, and the ophthalmic branch of the fifth. It sends out about ten filaments, which penetrate the sclerotica, and are distributed to the iris, forming the ciliary nerves.

THE EYE.

112. The external parts or appendages of the eye are, the *eyebrows, eyelids,* and the *lachrymal organs.*

113. The *eyebrows* are two arches of hairs, which grow over the superciliary ridge of the os frontis. They protect the eye from the moisture of the forehead, and from extraneous substances falling from above.

114. The *eyelids* are superior and inferior. The junction of their extremities forms the external and internal *canthus*. The eyelids are formed of common integuments, and contain in them a thin semilunar cartilage, named *tarsus*, and a row of stiff hairs, named *cilia* or eyelashes.

115. The eyelids cover the eyes during sleep, and are a great protection against bodies floating in the air; they also moderate the quantity of light received into the eye.

116. There are some sebaceous follicles, situated between the conjunctiva and the tarsal cartilages, called the glands of Meibomius.

117. The *lachrymal organs* consist of the *caruncula lachrymalis*, *lachrymal gland*, the *lachrymal ducts*, with the *puncta*, the *lachrymal sac*, and the *nasal duct*.

118. The tears keep the cornea and conjunctiva in a constant state of moisture, and wash away any hard foreign body.

119. The *lachrymal gland* is situated at the upper and outer part of the inside of the orbit; it gives out six or seven little ducts, which terminate near the internal margin of the upper eyelid. The *puncta lachrymalia* are two little orifices, surrounded by a cartilaginous ring, which assists in keeping them open, at the internal canthus, which admit the passage of the tears into the lachrymal sac, from whence they pass down the nasal duct into the nose.

120. The *caruncula lachrymalis* is a small glandular body, situate between the inner angle

of the eyelids and the ball of the eye; it has small hairs on its surface, which are of use to entangle bodies that get into the eye. It is likewise perforated for the transmission of the tears into the sac.

121. A little fold of the tunica conjunctiva lies between the caruncula lachrymalis and ball of the eye, which is called *valvula semilunaris.*

122. The *globe* or *ball* of the eye is composed of membranes or *coats*, *humours*, *vessels*, and *nerves.*

123. The *coats* of the eye are the *tunica conjunctiva*, *sclerotica*, *choroidea*, *cornea*, *iris*, and *retina.*

124. The *tunica conjunctiva* is a delicate mucous membrane, investing the entire outer surface of the eye, and internal parts of the eyelids; it is a reflection from the skin.

125. The *sclerotic coat* is fibrous and very strong; it is perforated posteriorly by the optic nerve, and anteriorly terminates in the cornea. It is thickest at the back part.

126. The *cornea* is that transparent covering of the eye which immediately invests the iris, and is intimately connected with the sclerotica. It is composed of several lamellæ, which may be separated by maceration.

127. The *choroid coat* is a vascular membrane, situated between the sclerotica and retina. It forms several folds at its termination, called the ciliary processes, and a radiated ring called the corpus ciliare. It secretes a black sub-

stance on its inner side, called *pigmentum nigrum.* Its inner coat is covered with ramifications of vessels, and has obtained the appellation of *tunica ruyschiana.*

128. It absorbs the rays of light, which are painful, or two powerful for the retina.

129. The *retina* is formed by the expansion of the optic nerve; it is very vascular, and terminates upon the edge of the capsule of the lens.

130. It is lined by a membrane internally, the tunica vasculosa retina, and covered by a delicate membrane named the tunica jacobi.

131. A yellow spot is seen on the outer side of the entrance of the optic nerve, called the *foramen centrale.*

132. The *iris* is a circular membrane, attached at its outer edge to the ciliary ligament. Its internal opening is called the pupil; the posterior coloured surface is called the uvea. It has two sets of fibres, radiated and circular, which are considered by some to be muscular, and to act as a sphincter to the pupil.

133. The iris immediately moderates, by its contraction and collapse, the quantity of rays which impinge upon the retina.

134. The space between the iris anteriorly and the cornea is called the *outer chamber;* that between the iris posteriorly and the crystalline lens is called the *inner chamber.* Each chamber contains fluid, called the *aqueous humour.*

135. The connexion of the iris, choroid, and

sclerotic coats, by cellular membrane, constitutes the *ciliary ligament.*

136. Besides the *aqueous humour*, there are the *vitreous* and *crystalline humours.*

137. The *vitreous humour* fills nearly the entire globe of the eye. It is contained in a capsule, called *membrana hyaloidea.*

138. The *membrana hyaloidea* surrounds the humour, and is separated anteriorly into two layers, which enclose the crystalline lens. At the edge of the lens these layers lie in folds, and form the canal of *Petit.*

139. The *crystalline lens* is formed of a number of concentric lamellæ, which are hardest in their centre, and is covered with a capsule of its own.

140. The water contained between the lens and its capsule is termed *aquala morgagni.*

141. The eye receives its blood from the ophthalmic artery, a branch of the internal carotid. The branches given off from the ophthalmic are the lachrymalis, centralis retinæ, ciliares, muscularis, superior and inferior, æthmoidalis posterior and anterior, supraorbitalis, palpebralis, frontalis, and nasalis. The veins of the eye pass into the facial vein and cavernous sinuses.

142. The nerves of the eye are the *optic,* the *third* and *fourth pair*, the *first branch* of the *fifth*, and the *sixth.*

143. The moving powers are the *recti muscles*, and the two *oblique.*

144. *Mechanism of vision.* Those rays of

light emanating from surrounding objects that fall on the cornea, are in part reflected, and contribute to form the brilliancy of the eye. The convex cornea refracts the remaining rays, and thus the intensity of the light is increased. The rays pass through the anterior chamber, pupil, and posterior chamber, to the lens. The number of them that fall on the lens is regulated by the *iris*, which contracts or dilates, to allow more or less light to pass through the pupil, according as an object may be more or less lighted. Those rays that fall on the iris are reflected, and returning through the cornea, exhibit the colours of the iris. The *crystalline lens*, both from its structure and form, very powerfully refracts the rays, and by increasing their intensity, makes a distinct image at the bottom of the eye: from the crystalline, they pass through the vitreous humour to the retina, where the impression is received, and conveyed along the optic nerve to the brain, and produces *vision.*

OF THE MOUTH, LARYNX, AND PHARYNX.

145. The bony parts of the mouth are, the *superior* and *inferior maxillary* bones, the *palate* bones, and the *teeth.*

146. The *teeth*, in the adult, are thirty-two in number. There are eight *incisores*, four *cuspidati* or *canini*, ten *bicuspidati*, and ten *molares.* The teeth situated farthest backwards are termed *dentes sapientiæ.*

147. The soft parts of the mouth are the *cheeks* and *lips*, the *gums*, the *soft palate* and *uvula*, the *tongue*, the *lining membrane*, and the *salivary glands.*

148. The *cheeks* and *lips* are formed of common integument, and are studded with little glands, called *buccal* and *labial* glands.

149. The *soft palate* is the upper loose part, which hangs down from the palate bones. It separates the mouth from the fauces.

150. The posterior central position of the soft palate, which is pendulous, is termed the *uvula.*

151. The *salivary glands* consist of the *parotid, sublingual* and *submaxillary* glands.

152. The *parotid gland* is placed between the angle of the lower jaw and the mastoid process of the temporal bone. It sends out a duct called *stenonian,* which perforates the buccinator muscle, and enters the mouth near the posterior molar teeth.

153. The *submaxillary glands* are found at the inner side of the basis of the lower jaw, between the two bellies of the digastric muscle. Each sends out a duct, which opens into the mouth, close to the frænum of the tongue.

154. The term *sublingual* indicates the situation of those glands, which send out ducts, that terminate on the sides of the tongue.

155. The mouth has two openings ; the posterior one opens into the fauces, and is called *isthmus faucium.*

156. The *isthmus faucium* is formed supe-

riorly by the edge of the soft palate, inferiorly by the tongue, and laterally by the arches of the palate.

157. The *arches* of the *palate* are formed by folds of the lining membrane, enclosing muscular fibres. The anterior or *glosso-palatine* terminates laterally at the base of the tongue. The posterior or *palato-pharyngeal* terminates in the sides of the pharynx.

158. The *constrictor isthmi faucium* is contained in the anterior arch.

159. The muscular fibres in the posterior arch are those of the *palato-pharyngeus.*

160. A triangular space is left between the two arches on either side, which contains the *tonsil* or *amygdala.*

161. The pharynx is a large cavity, bounded above by the os occipitis; behind, by the vertebræ; and below, by the œsophagus.

162. It is surrounded by muscular fibres, forming six muscles, called *constrictores pharyngis.*

163. There are *seven* openings into the pharynx: the *isthmus faucium*; the openings of the nose, or *choanæ narium;* the openings from the *Eustachian tubes;* the *glottis;* and the *œsophageal* opening.

164. The *œsophagus* is a cylindrical tube, continued from the pharynx to the stomach. It has two series of muscles, circular and longitudinal. It is lined internally by a mucous membrane, continuous from the mouth and pharynx.

165. The *larynx* is a hollow tube, situated at the top of the trachea, in front of the pharynx; it is composed of cartilage, bone, and ligaments; it is moved by muscles, and lined with a mucous membrane.

166. The *cartilages* are the *thyroid, cricoid,* the two *arytenoid,* and the *epiglottis.*

167. The *epiglottis* is situated above and over the glottis.

168. The *cricoid cartilage* is situated below the thyroid cartilage; it is in the form of a ring.

169. The *arytenoid cartilages* are very small, and are situated upon the superior, posterior, and lateral parts of the cricoid.

170. The *thyroid cartilage* occupies the greater part of the larynx. It has two lateral portions, termed *alæ.* The projection formed by their union in front is called *pomúm adami.* Ligaments connect these cartilages together.

171. The thyroid gland, composed of two lateral lobes, rests upon the sides of the thyroid cartilage, the carotid arteries, and neighbouring muscles of the larynx.

172. The ligaments of the glottis are called *chordæ vocales.* They form the principal part in the organ of voice, and extend from the arytenoid to the thyroid cartilage.

173. The upper opening into the pharynx is called *glottis.* The *larynx* is open inferiorly into the trachea.

174. The arteries of the *larynx* are the superior *laryngeal* branches from the external caro-

tids, and *inferior laryngeal* branches from the subclavian.

175. The *nerves* are principally from the eighth pair of cerebral nerves.

176. The *trachea* is a nearly cylindrical tube, commencing at the cricoid cartilage, and terminating in the bronchi.

177. The *trachea* is composed, besides its membranes, of a number of segments of cartilaginous circles, which are not extended to the posterior part. The canal is formed posteriorly of thick membranous substance.

178. The *bronchi* ramify at their entrance into the lungs, and these divisions are subdivided, till they terminate in cells.

VISCERA OF THE THORAX.

179. The boundaries of the *thorax* are the *sternum* and *ribs, anteriorly;* the *ribs, laterally;* and *posteriorly*, the *ribs* and *spine.* The *thorax* extends from the neck to the diaphragm.

180. The contents of the thorax are the *lungs,* and their investing membrane called *pleura,* the *heart* and its *pericardium,* and the contents of the *mediastina.*

181. The *pleura* is a serous membrane, covering the lungs and internal walls of the thorax. The part lining the ribs is called *pleura costalis;* the portion covering the lungs, *pleura pulmonalis.*

182. The space between the two pulmonary cavities of the thorax anteriorly is called the

anterior mediastinum. A similar triangular space behind is called the posterior mediastinum.

183. The parts contained in the *anterior mediastinum* are *absorbent glands*, and the remains of the *thymus gland.*

184. The *posterior mediastinum* contains the *trachea* and *a portion* of the *bronchi;* the *œsophagus; aorta descendens;* the *thoracic duct;* the *eighth pair of nerves;* the *vena azygos*; and some *lymphatic glands.*

185. The *lungs* are spongy bodies, occupying the lateral portions of the chest. They are externally of a light blue or greyish colour, speckled with small black spots.

186. The *right lung* is divided into three lobes or divisions, and the left into only two.

187. The structure of the lungs consists of the lining mucous membrane; the ramifications of the bronchi, terminating in air cells, veins, nerves, absorbents, and arteries; and parenchyma or cellular substance, connecting these parts together.

188. There are two sets of arteries distributed to the lungs; one for nutrition, and the other for the general circulation.

189. The nutritious arteries are the *bronchial;* the others are called *pulmonary*, which, unlike all other arteries of the body, convey venous blood.

190. The nerves are from the *great sympathetic* and *eighth pair.*

191. The *pericardium,* which contains the

heart, is a fibro-serous membrane; it is composed of two layers, the inner of which is reflected over the heart.

192. The *heart* is a hollow muscle, and is situated in the lower and front part of the chest.

193. Its divisions are into an *apex* or point turned forward and to the left side, and a *base* turned backwards and upwards; a superior and inferior surface; and a right and left margin. The apex of the heart generally points to the cartilage of the fifth or sixth ribs.

194. The substance of the heart is composed of its external covering; its muscular part; and, internally, its lining membrane.

195. There are four cavities in the heart; the two at the base are called *auricles*, the two near the apex are called *ventricles*.

196. The two *auricles* are separated from each other by a thin membrane, in which there is a foramen in the *fœtus*, called *foramen ovale*.

197. The *ventricles* are separated by a thick membrane, called *septum ventriculorum*.

198. There are four openings into the *right auricle*, viz. the openings of the *venæ cavæ*, the opening of the *coronary vein*, protected by a valve, and the communication with its corresponding ventricle.

199. The eminences and depressions to be seen in the right auricle are, the *musculi pectinati*, or fleshy fibres; the *Eustachian valve;* the *tuberculum loweri*, or angle where the venæ

cavæ unite; and the annulus *fossæ ovalis*, or part filling up the foramen ovale.

200. The opening from the right auricle into the ventricle is protected, on the ventricular side, by three valves, or one valve having three points, called the *tricuspid valve*. It prevents the return of blood from the ventricle into the auricle.

201. The other opening of the right ventricle is into the pulmonary artery, and is protected by three valves, called *sigmöid* or *semilunar;* in the central extremity of each of which is a small body, called *corpus sesamoideum.*

202. In this ventricle are observed the fleshy pillars, called *carneæ columnæ*, sending out tendinous threads to the edges of the *tricuspid valve*, called *chordæ tendineæ.*

203. There are five openings into the left auricle, viz. the *four* from the pulmonary veins, and the *communication* with its corresponding ventricle.

204. There are two openings into the left ventricle, viz. the *auricular* and the *aortic opening*.

205. Interiorly are seen very strong *carneæ columnæ.*

206. The auricular opening is guarded internally by the *mitral valve*, and the *aortic* is protected by three *sigmoid valves*, each containing a *corpus sesamoideum.*

207. The proper arteries of the heart are *the two coronary arteries.* Its veins terminate in

the *coronary vein*, and its *nerves* are from tl cardiac plexus, situated behind the aorta, an formed by branches of the sympathetic and th par vagum.

208. The *aorta* arises from the left ventricle, ascends obliquely to the right side, and then makes a curve backward to the left, ascending as high as the second dorsal vertebræ; it then passes downwards in front of the left side of the dorsal vertebræ, as far as the os sacrum, where it bifurcates, dividing into two iliacs. The divisions of the aorta are into the *arch*, the *thoracic* and *abdominal aorta*.

209. The arteries given off from the arch are—

1. The *coronary arteries* to the heart itself.
2. The *arteria innominata*, which divides into right carotid and right subclavian.
3. The *left carotid*.
4. The *left subclavian*.

210. The thoracic aorta gives off—

1. *Bronchial* arteries, to nourish the lungs.
2. *Œsophageal*.
3. *Intercostal*, to the pleura, intercostal muscles and spine.

211. The abdominal aorta gives out the following arteries—

1. The *right* and *left phrenic*, to the diaphragm.
2. The *cœliac*, which divides into—

a. The *hepatic*, to the liver, gall-bladder, and stomach. The hepatic gives off, 1. The hepatica dextra, and this gives off the cystic branch. 2. Hepatica sinistra. 3. Coronaria dextra. 4. Gastro-epiploica dextra. 5. Inferior pyloric, pancreatico-duodenal, pancreatic and epiploic branches.

b. The *splenic*, to the spleen, pancreas, and stomach.

c. The *coronaria ventriculi*, distributed to the stomach, œsophagus, omentum minus, and diaphragm.

3. The *superior mesenteric* supplies the small intestines, and gives to the large intestines, the ilio colica, colica dextra, and colica media.

4. *Capsular*, to the renal capsules.

5. *Renal*, to the kidneys.

6. *Spermatic*, to the testicles.

7. *Inferior mesenteric*, to the large intestines.

8. *Lumbar*, four on each side, to the loins.

9. *Middle sacral*, to the os sacrum, peritoneum, &c.

10. *Common iliacs* divide and supply the entire pelvis and lower extremities.

212. The *coats* of an artery are *three:* an exterior or cellular coat, a fibrous or muscular coat, and the elastic coat or tunica elastica.

213. The coats of the veins are the same in number, but much thinner.

214. The veins in general accompany the arteries, and receive their names accordingly; the principal exceptions are the azygos major and minor.

215. The vena azygos, first formed by the lower left intercostal veins, crosses the spine at about the middle of the thorax, where it receives the right intercostals and right bronchial vein, and then terminates in the vena cava superior, just before it enters the pericardium.

216. The azygos minor receives the upper left intercostals, left bronchial vein, and some œsophageal branches, and then empties itself into the left subclavian vein.

217. The thoracic duct commences at the

third lumbar vertebræ, by an enlarged extremity termed receptaculum chyli; it passes up through the aortic opening of the diaphragm, between the aorta and vena azygos, and terminates in the angle formed by the left subclavian and internal jugular veins.

218. The *diaphragm* is divided into two parts, called the larger and smaller muscles of the diaphragm. The larger arises from the ensiform cartilage, and from the cartilage of all the ribs below the sixth, and is inserted into the cordiform tendon. The smaller muscle or appendix arises, by its long crura, from the fourth, and adheres to the superior lumbar vertebræ, and, by its short crura, from the second and third lumbar vertebræ, and is inserted into the cordiform tendon.

219. There is an opening in the tendon, for the vena cava; one between the long crura, for the aorta and thoracic duct; and another between the short crura, for the passage of the œsophagus.

ABDOMINAL VISCERA.

220. The *abdomen* extends from the diaphragm to the pelvis. It is bounded, laterally and in front, by the integuments and muscles, and posteriorly by the spine.

The abdomen is divided into regions: the *epigastric*, *umbilical*, and *hypogastric*.

221. The *epigastric region* occupies the part above a line drawn from the extremity of the last true rib to the other. It is subdivided into three regions; the *scrobiculus cordis* occupies the centre, and the sides are called right and left *hypochondria*.

222. The *umbilical region* extends an equal distance above and below the umbilicus, between the other two. Its centre is called the *umbilical region;* its sides, the *ilia* or *flanks;* and the parts more posteriorly are called *lumbi* or *loins*.

223. The *hypogastric region* extends from the middle region to the *pubis*. Its middle division is called *regio pubis*, and its two sides *inguina* or *groins*.

224. The contents of the abdomen, besides the *peritoneum*, which lines it, are the *alimentary canal* and its *appendages*, and a part of the *urinary organs*.

225. The *alimentary canal* consists of the *stomach* and *small* and *large intestines*. The appendages are the *liver*, *gall-bladder*, the *spleen*, and *pancreas*.

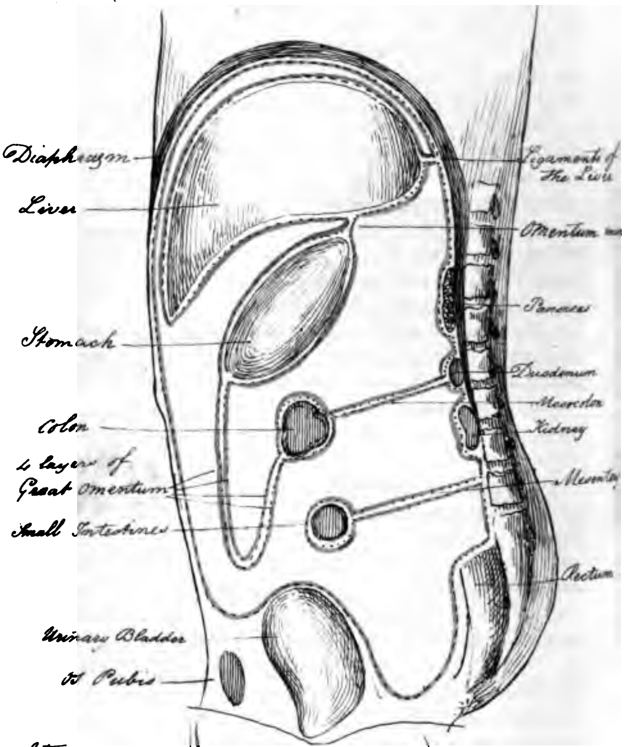
226. The *peritoneum* is a serous membrane, lining the cavity of the abdomen, and investing the various viscera, giving them strength and support. Its reflexions from one viscus to another form duplicatures, which receive different names, according to their situation. The reflexion of the peritoneum, from the diaphragm to the liver, forms the ligaments of the liver;

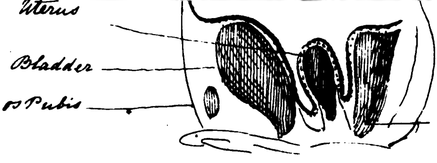
that from the liver to the stomach forms the lesser omentum; from the stomach to the transverse colon forms the great omentum; that portion enclosing the colon forms the meso·colon; that which extends down and over the small intestines is called the mesentery. There are, besides these, the ligaments of the colon, meso-rectum, and appendices epiploicæ, which are formed by it.

227. *Reflexions of the peritoneum.* Tracing the peritoneum upwards from the abdominal muscles, it covers the diaphragm, passes over the liver, (forming its ligaments,) and at its concave part meets a layer coming from the tendon of the diaphragm and under surface of the stomach. The two layers pass to the little curvature of the stomach, forming the lesser omentum, cover it, separate at the great curvature, and hang down in folds over the intestines; they then ascend and enclose the colon, forming the mesocolon, and again separate. The lower layer passes over the small intestines, forming mesentery, goes down over the kidneys, part of the rectum, bladder, and uterus, and mounts up the abdominal parietes The upper layer goes over the pancreas, duodenum, and crura of the diaphragm, and rises to meet the other portion at the under surface of the liver.

228. The stomach is a membranous bag, of the figure of the bagpipe; it is situated in the left hypochondrium and part of the epigastrium. It has two extremities, the *cardiac* and *pyloric*;

A Diagram explanatory of the Reflexions of th
Peritonæum:





Reflexion of the Peritonæum over th
Uterus in the Fem

two *curvatures*, the *lesser* and *greater;* two *orifices*, the *superior* or *cardiac*, and *inferior* or *pyloric*.

229. The coats of the stomach are three: the *peritoneal*, *muscular*, and *mucous* or villous.

230. It receives its arteries from the *cœliac*. The branches distributed to it are the *superior gastric*, supplying the small curvature, the *right inferior gastric* to the large curvature, the *pyloric*, the *left gastric*, and *arteriæ breves* from the splenic, distributed to the cardiac extremity. Its veins terminate in the vena portæ. Its nerves are derived from the great sympathetic and eighth pair.

231. The gastric juice is secreted by the villous coat, and little glands of the stomach. It dissolves the nutritious part of the food.

232. The *small intestines* commence at the pylorus. They are the *duodenum*, *jejunum*, and *ilium*.

233. The *duodenum* differs from the other small intestines in being larger; it is more sacculated; it has two ducts emptying themselves into it, and it is only partially surrounded by peritoneum.

234. The duodenum commences at the pylorus, turns upwards, passing in contact with the gall-bladder; it descends perpendicularly over the right kidney, and then crosses over to terminate in the jejunum, at about the second lumbar vertebra.

235. The biliary and pancreatic ducts ter-

minate in the back part of the duodenum, just where it makes the curve.

236. The *jejunum*, so named from being generally found empty, terminates in the ilium, and closely resembles it in its structure.

237. The upper two-fifths of this portion of intestines is called *jejunum*, and the lower three-fifths *ilium*.

238. The distinctive characters of the *jejunum* are, its coats are thicker, it has more valvulæ conniventes, and consequently a greater surface for absorption.

239. The large intestines commence at the termination of the ilium; they are the *cæcum*, *colon*, and *rectum*. They have three coats, like the stomach and small intestines.

240. The large intestines are particularly characterized by their sacculated appearance, formed by ligamentous bands, and differ from the small intestines in being wider, shorter, and straighter, and by having the appendices epiploicæ and the mucous follicles, called glandulæ aggregatæ.

241. The *cæcum* or *caput coli*, is the first portion; it commences at the ilium, and is situated beneath the right kidney, resting on the right iliac fossa.

242. At the junction of the cœcum with the third portions, the lining membrane forms a fold, called *valvula ilii*.

243. There is a little worm-like appendage attached to the cœcum, called *appendix vermiformis*.

244. The *colon* is divided into four portions; the *ascending*, the *transverse*, the *descending*, and its *sigmoid flexure*, which terminates in the rectum.

245. Little folds, containing fat, hang down from the colon, called *appendices epiploicæ*.

246. The *rectum* commences at the sigmoid flexure of the colon, and terminates in the anus.

247. Its distinctive characters are, its covering only anteriorly and superiorly by peritoneum, and its wanting the three longitudinal bands that are seen on the cœcum and colon.

248. The arteries of the duodenum are, the pancreatico-duodenal, pyloric, and some branches from the superior mesenteric; those of the jejunum, ilium, and part of the colon, from the *superior mesenteric;* the left part of the colon and rectum is supplied by the *inferior mesenteric* and *hæmorrhoidal arteries.*

249. The veins of the intestines terminate in the *vena portæ.*

250. The nerves are supplied from the *great sympathetic* and *eighth pair.*

251. The *liver* is a conglomerate gland, the largest of the body; it is situated in the right hypochondrium, epigastrium, and part of the left hypochondrium. It is superiorly convex, and inferiorly concave. It is divided into three lobes; a *right, left,* and the *lobulus spigelii.*

252. The *liver* is kept in its place by five ligaments, which are named the *broad,* the

round, the *right* and *left lateral*, and the *coronary* ligament.

253. These ligaments are exclusively formed of peritoneum, excepting the round ligament, which consists of the remains of the umbilical vein.

254. There are four fissures or divisions of the liver, viz. the *great fissure*, called fossa umbilicalis, for the passage of the umbilical vein in the fœtus, and the ligamentum rotundum in the adult; the *fissure* for the *vena portæ*, named sulcus transversus, vel sinus portarum, through which pass the great vessels, nerves, biliary ducts, and absorbents; that for the *vena cava*, and the one for the *ductus venosus* in the fœtus.

255. The substance of the liver is composed of *ramifications of blood-vessels*, *absorbents*, *biliary ducts*, and *nerves*, connected together by cellular substance.

256. The blood-vessels of the liver are: the *hepatic artery*, for its nourishment; the *vena portæ*, which ramifies through it to secrete the bile; and the *vena hepatica*, which returns the blood from the hepatic artery and vena portæ. The *nerves* are from the *great sympathetic* and *eighth pair*.

257. The vena portæ consists of the junction of the *superior* and *inferior mesenteric veins*, with the *splenic veins*, and branches from the stomach, pancreas, and gall-bladder. It carries blood of a dark blackish colour.

258. The excretory ducts of the *liver*, *tubuli bilarii*, arise from the acini, and ultimately unite to form the *hepatic duct*, which joins with the *cystic duct*, and forms the *ductus communis choledochus*.

259. The *gall-bladder* is placed in the concave surface of the right lobe. It consists of a *fundus*, *body*, and *cervix*. It has three coats, an external or *peritoneal*, a middle one, probably *muscular*, and a *villous* coat. A duct proceeds from the cervix, called *ductus cysticus*, which joins the hepatic duct, and forms the ductus communis choledochus. This duct terminates in the duodenum.

260. Its vessels and nerves are derived from the same as those of the liver.

261. The *pancreas* is a long, flat, glandular body, placed at the back part of the epigastric region, behind the stomach, and in front of the spine. Its greater extremity is connected with the duodenum, its lesser with the spleen. The *pancreatic duct* runs horizontally within the substance of the gland, and terminates in the duodenum.

262. The arteries of the pancreas are branches of the cœliac. Its veins go to the vena portæ, and its nerves are from the eighth pair and great sympathetic.

263. The *pancreatic juice* is secreted by the acini of the pancreas, and conveyed by the pancreatic duct into the duodenum, to assist in chylification.

264. The *spleen* is a soft substance of a purplish colour, situated in the left hypochondrium, between the large extremity of the stomach and the false ribs; its lower part is behind the colon, and rests upon the upper part of the left kidney; externally convex, internally concave.

265. It is formed of a congeries of *blood-vessels*, *lymphatics*, and *nerves*, connected and supported by cellular substance.

266. Its artery, called the *splenic*, arises from the *cœliac*. Its veins assist in forming the vena portæ, and its nerves are from the eighth pair and great sympathetic.

267. The *kidneys* are two glandular bodies, situated at the back part of the abdomen, on each side of the lumbar vertebræ, resting upon the broad part of the diaphragm, and the quadrati lumborum muscles.

268. The right *kidney* is lower than the left, in consequence of the situation of the great lobe of the liver.

269. They are composed of two kinds of substances, a cortical and medullary.

270. The urine is secreted by the acini (formed by the minute secerning extremities of the renal artery) into the tubuli uriniferi, which are arranged into conical bundles, and terminate in the mammellæ or papillæ, which are about ten or twelve in number; a membranous tube, called calyx, or infundibulum, arises round the base of each of these mammellæ. These calices, or infundibula, unite into two or three

large trunks, which dilate at the sinus of the kidney, into what is termed the pelvis. The urine, following the course of the above parts, then passes into the ureters, and from thence into the bladder.

271. The urine is prevented returning from the bladder by the valvular termination of the ureters.

272. The arteries of the kidneys are the two renal. Its nerves are from the great sympathetic and eighth pair.

273. The right renal artery is longer than the left, in consequence of the vena cava, behind which it passes, being placed on the right side of the aorta.

274. The left renal vein is longer than the right, having to pass across the fore part of the aorta.

275. The *renal glands* are two small flat bodies situated above the kidneys, the uses of which are unknown.

276. The urine is discharged by the contraction of the bladder, and the action of the diaphragm and abdominal muscles, which force the intestines down upon the bladder.

OF THE PELVIC VISCERA.

277. The male pelvis contains the *bladder*, *rectum*, *prostate gland*, *vesiculæ seminales*, and *vasa deferentia.*

278. The female pelvis contains the *bladder, rectum*, and the *uterus* with its appendages.

279. The *urinary bladder* is a large membranous bag, situated in the fore part of the pelvis, behind the symphysis pubis.

280. It rises above the ossa pubis into the abdomen, when it is distended.

281. Its divisions are into a *fundus*, turned upwards; a *body;* and a *neck*, turned downwards and forwards.

282. It has three coats: a *peritoneal*, which covers only the fundus, sides, and back part; a *muscular*, and a *villous* coat.

283. There are three openings into it: one *inferior*, which is the beginning of the urethra, surrounded by the neck of the bladder; and *two posterior* and lateral openings, which are the terminations of the ureters. The two latter openings from the ureters are obliquely placed, and run some way between its coats.

284. The arteries of the bladder are from the internal iliacs. The nerves are from the sacral and great sympathetic.

285. The *testes* are two glandular bodies, situated in the cavity of the scrotum, separated from each other by condensed cellular substance, called the septum.

286. Each testicle has two coats: an outer one, called *tunica vaginalis;* and an inner one, called *tunica albuginea*.

287. The body of the testicle is composed of an immense number of whitish tubes, called

tubuli seminiferi, which unite in bundles, and form the vasa recta, situated at the posterior border of the testes, these ascend and terminate in the vasa efferentia, which perforate the tunica albuginea at its upper part, and, being convoluted, there form the globus major. The vasa efferentia all terminate in the vas deferens, which forms by its convolutions the globus minor; it then ascends, and assists in forming the spermatic cord.

288. The arteries of the testes are the two *spermatic arteries*, which arise from the aorta. Frequently the left spermatic artery arises from the left renal artery.

289. The right *spermatic vein* terminates in the inferior cava, and the left in the left renal vein. The nerves of the testicle are principally from the renal and lumbar plexus.

290. The *vas deferens*, passing upwards from the epididymis, through the abdominal ring, crosses over the psoas muscle, and descending in the pelvis, gets behind the bladder, to which it closely adheres, and gradually approaches its fellow of the opposite side; it terminates in the vesicula seminalis, of the same side.

291. The *vesiculæ seminales* are two small oblong membranous reservoirs, situated at the lower and under part of the bladder. Each vesicula is formed by the convolutions of one tube. It pierces the prostate gland, and opens into the urethra.

292. The *prostate gland* is a firm glandular

body, somewhat of the shape of a horse-chesnut, situated at the neck of the bladder; through its substance the urethra passes. Its ducts, ten or twelve in number, open into the urethra.

293. The *spermatic chord* is composed of the spermatic artery and veins; the spermatic nerves, lymphatics, and the vas deferens, are connected together by cellular substance, and covered by the cremaster muscle.

294. The *uterus* is a hollow viscus, situated in the female pelvis, between the bladder and rectum. It is divided into a *fundus*, *body*, and a *cervix*.

295. It is composed of three coats: an external or *peritoneal* covering, a *muscular*, and a *villous* coat.

296. It has three openings into it: two at the angles of its fundus, leading to the Fallopian tubes; and one at its neck, leading to the vagina.

297. The appendages of the uterus are, the *ligamenta lata, ligamenta rotunda, ovaria, fallopian tubes*, and *vagina.*

298. The *ligamenta lata* are two doublings of the peritoneum, sent off from the edges of the uterus to be fixed to the sides of the pelvis. They contain and support the *ovaria, Fallopian tubes, ligamenta rotunda,* and the *vessels* and *nerves* of the uterus.

299. The *ligamenta rotunda* are two long roundish cords, arising from the corners of the uterus, in front of and below the Fallopian tubes.

They pass through the abdominal rings, and are lost upon the pubes.

300. The *ovaries* are two oblong flat bodies, situated in the ligamenta lata, and connected to the uterus by two ligaments. They are supposed to contain the rudiments of the fœtus.

301. The *Fallopian tubes* are two small tubes, proceeding from the angles of the uterus, towards the lateral part of the pelvis. Their outer extremities are expanded in the form of a membranous fringe, called fimbria. In structure they appear to resemble the uterus.

302. The Fallopian tubes are open at their extremities into the abdomen, which affords the only instance of direct continuation of mucous and serous membranes.

303. The *vagina* is a membranous canal, extending from the neck of the uterus to the pudendum.

304. It is covered, at its upper and back part, by peritoneum. Internally, it is lined by a mucous membrane.

305. The uterus, and its appendages, are supplied with blood posteriorly by the uterine and spermatic arteries.

306. Its nerves are from the *lumbar, sacral,* and *great sympathetic.*

PARTS PECULIAR TO THE FŒTUS.

307. In the fœtus, a membrane, called *membrana pupillaris,* closes up the pupil of the eye;

it is attached to the loose edge of the iris, and disappears some time before birth.

308. The *thymus gland*, situated in the anterior mediastinum, is very large; it gradually disappears after birth.

309. The parts peculiar to the fœtal circulation are, the *foramen ovale* of the heart; *canalis arteriosus; ductus venosus;* the *funis*, or *umbilical chord;* the *umbilical vein*, and the two *umbilical arteries.*

310. The *foramen ovale* is an opening of communication between the two auricles.

311. The *canalis arteriosus* forms the medium of communication between the pulmonary artery and aorta.

312. The *ductus venosus* passes from the umbilical vein to the inferior vena cava.

313. The *umbilical vein* passes from the umbilicus to the liver.

314. The *umbilical arteries* arise from the internal iliacs, and pass to the umbilicus.

315. The *umbilical chord* consists of the umbilical vein and two umbilical arteries ; it passes from the placenta of the mother, to the umbilicus of the child.

ANATOMY OF THE EAR.

316. The parts which form the ear, or organ of hearing, are external and internal.

317. The external parts consist of the auricle

or proper ear, and the external meatus auditorius.

318. The *auricle* is composed of cartilage, cellular substance, and small muscular fibres.

319. The *meatus auditorius externus* is a cylindrical canal. It proceeds inwards, forwards, and upwards, and at its extremity, a little downwards. This canal is composed of cartilage, bone, and a lining of the common integuments, which is studded with minute glands, called *ceruminosæ*, the office of which is to secrete the wax of the ear.

320. The use of the wax is to lubricate the passage, and to protect it from foreign bodies.

321. The *meatus auditorius externus* concentrates sounds, and conveys them to the inner ear.

322. At the extremity of this canal is situated the *membrana tympani*, of a thin and elastic nature, fixed in a circular bony groove. It is formed of the lining membrane externally, and a continuation of periosteum internally.

323. The parts of the internal ear are, the tympanum and labyrinth.

324. The *tympanum* is a hemispherical cavity, situated between the membrana tympani and labyrinth.

325. The openings into the tympanum are, that of the Eustachian tube from the palate, those of the cells of the mastoid process, the fenestra ovalis, and the fenestra rotunda.

326. The *tympanum* is lined with perios-

teum. It is filled with air, and contains four little bones, called ossicula auditûs, which form a chain of communication between the membrana tympani and the labyrinth.

327. The *ossicula auditûs* are, the *malleus, incus, orbiculáris,* and *stapes.*

328. They are articulated with each other by joints and ligaments, and are regulated in their position by some muscles; viz. the *tensor tympani, laxator tympani,* and *stapedius.*

329. The *labyrinth* consists of the vestibule, cochlea, and semicircular canals.

330. The *vestibule* is of an oval shape, nearly the size and form of a grain of barley; it is situated at the inner side of the stapes, and between the cochlea and semicircular canals.

331. The foramina, which open into the vestibule, are, the *fenestra ovalis, fenestra rotunda, five foramina* of the *semicircular canals,* and four or five perforations for the nerve.

332. The *cochlea* is situated rather at the fore part of the vestibule. Its apex faces outwards, and its base towards the inner meatus.

333. The *cochlea* is formed of a central pillar, with canals winding round it like a staircase, or more like the shell of a snail.

334. The *pillar* is named *modiolus,* and its expanded extremity is named infundibulum.

335. The *modiolus* admits, in its centre, the passage of the portio mollis of the seventh pair of nerves, which is distributed in the cochlea.

336. One of the canals of the cochlea commu-

nicates with the vestibule, called *scala vestibuli*, by the fenestra rotunda; the other with the *tympanum*, called *scala tympani*.

337. The *volute* forms two circles and a half, in the manner of those of a snail. The canals are conical, and at their apex communicate together. Their junction is called *canalis scalarum communis*.

338. The *semicircular canals* are three, and are named, from their position, *superior* or *vertical*, *posterior* or *oblique*, and *exterior* or *horizontal*.

339. They are all situated in the petrous portion of the temporal bone.

340. Each of them forms about three-fourths of a circle. They are of dimensions sufficient to admit the head of a pin; their extremities are rather enlarged, and the enlarged part is called *ampulla*.

341. These *canals* terminate in five orifices, two of them being united at one of their extremities. Three of these orifices terminate at the inside, and two at the outside, of the vestibule.

342. The *meatus auditorius internus* is situated in the posterior surface of the pars petrosa.

343. It is divided into an upper and under fossula.

344. The fore part of the inferior fossula points towards the cochlea; and little perforations are seen in it, for the passage of filaments of the portis mollis of the seventh pair of nerves, which go to the cochlea.

345. There is a larger perforation in the middle, which admits a portion of the nerves to the infundibulum.

346. Four or five cribriform perforations are seen in the back part of the inferior fossula, which transmit the portion of the portio mollis destined for the vestibule and semicircular canals.

347. There are two passages in the upper fossula; an anterior and posterior. The anterior or larger, called also *aquæductus Fallopii,* admits the passage of the portio dura of the seventh pair of nerves.

348. *The canal of Fallopius* terminates at the foramen stylo-mastoideum.

349. The various parts of the labyrinth are lined with periosteum, which also assists in forming the various partitions.

350. There is, besides, a pulpaceous membrane, on which the nerves are distributed.

351. The *pulpy* membrane forms a sac in the vestibule, called *sacculus vestibuli.*

352. The arteries of the labyrinth are branches from the vertebral artery, and pass through the cribriform plate of the meatus internus.

353. The various cavities contain also a watery fluid, called *aqua labyrinthi.* This fluid is carried off, if superfluous, by the *aqueducts of Cotunnius,* which terminate on the surface of the dura mater.

354. The nerves of the labyrinth are derived entirely from the seventh pair.

355. The seventh pair, or *auditory nerve*, is divided into two portions: the *portio dura* and *portio mollis*.

356. The *auditory nerve* passes along the internal meatus, covered by the same membranes as the brain.

357. The *portio dura* passes along the aquæductus Fallopii, and sends off branches to the stapedius muscle and mastoid cells.

358. Another branch, called *chorda tympani*, passes through the cavity of the tympanum; it supplies the malleus and membranes of the tympanum, and then joins the *lingual branch* of the *fifth pair*.

359. The *portio mollis* is divided into two parts; one goes to the cochlea, the other to the vestibule and semicircular canals.

360. The branches to the cochlea pass through the cribriform plate of the modiolus to the pulpy membrane lining the scalæ, and are diffused and expanded on the different parts of it. The greatest portion of the nervous filaments are spread out on the pulpy membrane most remote from the modiolus.

361. The rest of the nerves are expanded, and form plexuses in the vestibule and semicircular canals.

362. The portio mollis, which spreads out upon the pulpy membranes of the labyrinth, forms the principal part of the organ of hearing.

PHYSIOLOGY.

OF THE NUTRITIVE FUNCTIONS.

1. *Mastication* and *Insalivation.* The food being taken into the mouth is retained there, and brought under the action of the teeth by the lips, buccinator muscle, and tongue. By the lateral motions of the lower jaw, the inferior molar teeth grind the alimentary substance against the upper ones. During this time, the food becomes mixed with the saliva and mucus of the mouth, which convert it into a pultaceous and easily swallowed bolus, and also fit it for further digestion and assimilation.

2. *Deglutition.* When the food has been sufficiently divided and imbued with saliva, it is placed in a mass upon the dorsum of the tongue, which is rendered concave for its reception. The mouth is then closed, the apex of the tongue applied to the roof of the mouth, and the rest of the organ brought successively in contact with it, from before backwards; the food having no other way to escape this pressure, slides on the inclined plane formed by the

tongue, through the isthmus faucium, into the pharyx, which is drawn upwards and forwards to receive it. At this time the *velum* palati is elevated, and thus prevents the food getting into the nostrils or Eustachian tubes. The larynx is raised, and rather inclined forwards, at the same time that the pharynx is elevated, so that the glottis is brought under the epiglottis, which amply covers it, and thereby prevents the food from entering that cavity. As soon as the food has passed the isthmus into the pharynx, the velum is depressed, and thus cuts off the return of food into the mouth at the same time that it assists in its descent. The moment the food has passed into the pharynx its constrictors begin to act, and gradually force it into the œsophagus. The larynx, pharynx, velum, &c. are now restored to their natural position.

3. *Digestion.* The alimentary matter, being propelled by the contractions of the œsophagus into the cardiac extremity of the stomach, becomes acted upon by the gastric juice, which, assisted by the heat and muscular contraction of the stomach, quickly dissolves the digestible part, and entering into union with it, produces a new fluid, called chyme. The chyme is gradually conveyed, by a kind of peristaltic motion, from the cardiac to the pyloric end of the stomach. When it has been sufficiently operated upon by the stomach, it passes through the pylorus into the duodenum. The pylorus pos-

sesses a peculiar sensibility, which may be considered as a kind of sentinel, that prevents any matter from passing through it but such as has been properly converted into chyme.

4. *Chylification.* The chyme having passed through the pylorus into the duodenum, becomes mixed with the *biliary*, *pancreatic*, and *intestinal* secretions. These juices, by their action upon the *chyle*, separate it into two portions; one a milky fluid called chyle, and another portion called *fæces.* By some, the alkaline and saline ingredients of the bile are supposed to combine with the chyle, while the albumen and resinous portion combines with the excrementitious portion. The chyle attaches itself to those irregular circular folds of the mucous membrane of the small intestines called valvulæ conniventes, where it is absorbed by the lacteals, and conveyed to the thoracic duct. The large intestines also possess lacteals, so that if any portion of chyle should not have been absorbed in the small intestines, it is taken up in the large ones. The fæces pass from the small to the large intestines, through the valvula coli, and there acquire that peculiar fœtid odour which distinguishes them. They are gradually urged on into the rectum, where they remain for a certain time, and are then discharged.

5. *Excretion of the fæces.* The fæces gradually accumulating in the rectum, stimulate it to discharge its contents; the levator and sphincter ani then relax, and the diaphragm and abdomi-

nal muscles expel the fæces. After the excretion, the levator chiefly retracts the intestine, which is again closed by its sphincter.

6. *Absorption and course of the chyle.* Those absorbents which take up the chyle in the intestines are called lacteals. They are most numerous in the jejunum. The lacteals of the small intestines, and part of the large, convey the chyle to the mesenteric glands, where it is supposed to undergo some change. Passing from one gland to another, they form one or two large trunks. These accompany the superior mesenteric artery to the right side of the aorta, and there join the thoracic duct. The thoracic duct is formed by the junction of the lacteals with the lymphatics of the pelvis and lower extremities. It begins on the third lumbar vertebra, and here swells out into an oval sac called *receptaculum chyli.* Proceeding upwards on the right side of the aorta, it passes through the aortic opening of the diaphragm into the posterior mediastinum. On the fourth dorsal vertebra it crosses behind the aorta to reach the left side of the neck, and terminates in the angle of the union of the subclavian and jugular veins.

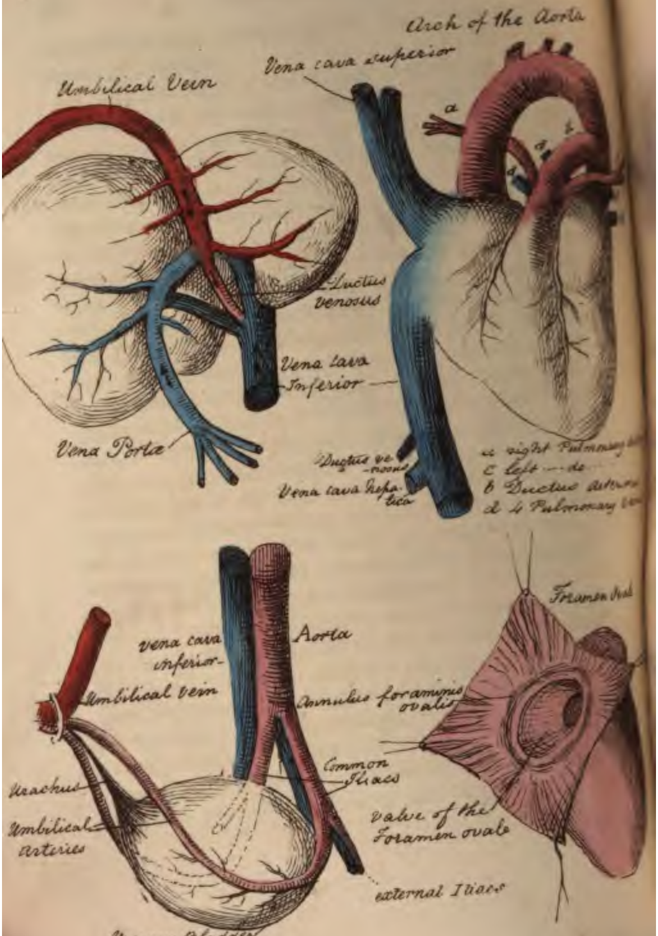
7. *Use of the spleen.* The physiology of the spleen is not understood. By some it has been thought subservient to the function of the liver, by preparing a fluid for the vena portæ. Others consider it subservient to the stomach, and that

it receives the surcharge of blood when the stomach is empty.

8. *Circulation of the blood.* The blood is returned from the upper part of the body by the superior vena cava, from the inferior part by the inferior cava, and from the heart itself by the coronary vein to the right auricle. This contracts and discharges its contents into the right ventricle; when completely filled, the right ventricle contracts; by that contraction, its tricuspid valve is shut, and its contents propelled through the pulmonary artery and its ramification to the lungs. From the lungs the blood is returned by the four pulmonary veins to the left auricle, which, being distended, now contracts and throws the blood into the left ventricle. The left ventricle then contracts, its mitral valve shuts, and all the blood is propelled through the aorta into the capillary system, to be again returned by the veins. The aorta and pulmonary artery are each guarded by three semilunar or sigmoid valves, which prevent the blood returning into the ventricle.

9. *Of respiration.* The air is reeeived into the lungs by the enlargement of the cavity of the chest. This is effected principally by the diaphragm and intercostal muscles. The blood of the pulmonary artery being exposed to the influence of the air in the lungs, is converted from a dark colour into a florid red; it is supposed to give out hydrogen and carbon, and to

Diagrams to explain the Circulation of Blood in the Fœtus



Printed by [illegible]

attract oxygen. When the blood has been properly acted upon, the inspiratory muscles relax, while the abdominal muscles, pressing the viscera upwards against the diaphragm, diminish the cavity of the chest, and thus expel the air.

10. *Of the fœtal circulation.* The ramifications of the umbilical vein absorb the blood deposited by the uterine arteries in the cells of the placenta, and convey it by the umbilical vein, through the umbilicus, into the abdomen of the fœtus. Here the vein divides into two branches, one of which conveys the greater part of the blood through the liver, whilst the other, called *ductus venosus,* terminates in the inferior vena cava, from which the blood passes into the right auricle. From the right auricle, it passes partly into the right ventricle, and partly through the foramen ovale, into the left auricle. That portion of blood which passes into the right ventricle is transmitted into the pulmonary artery, which sends part of it to the lungs, but the greater part to the descending aorta, by the canalis arteriosus. The blood which is sent into the lungs is returned by the four pulmonary veins to the left auricle, there mixes with the blood received through the foramen ovale, and then passes into the left ventricle, whence it is transmitted into the aorta, where it mixes with the blood brought by the canalis arteriosus, and is distributed through the whole system, and is brought back by the veins. To the mother the blood is

returned by the two umbilical arteries, which are continuations of the hypogastric arteries, branches of the internal iliacs.

11. The temperature of the blood is about 100°. The cause of it is imperfectly understood. Some attribute it to the caloric evolved in the lungs, and say that it is carried by means of the blood to the different parts of the body; others consider that caloric is evolved in the general capillaries at the time of the conversion of the arterial into venous blood. Mr. Brodie considers the nervous system as having some connexion with the production of animal heat.

OF SECRETION.

12. The term secretion is applied to that process by which part of the blood is separated from the circulatory organs. The manner in which secretion is effected is perfectly unknown.

13. The secretions are divided into *exhalations*, *follicular secretions*, and *glandular secretions*.

14. *Of the secretion and excretion of the tears.* The tears are secreted by the lachrymal gland, from whence they are conveyed by six or seven excretory canals to the upper and outer part of the eye, where they pierce the conjunctiva, and are carried by a triangular canal, formed in the edges of the tarsi to the inner canthus of the eye, where they are absorbed by the *puncta lachry-*

malia, and conveyed from thence by little ducts to the *lachrymal sac.* From the *lachrymal sac,* the tears pass by the *nasal duct* into the inferior meatus of the nose.

15. *Use of the tears.* The use of the tears seems to be to prevent the cornea drying; to prevent the friction of the eyelids on the eyes, and to wash away any extraneous bodies which may have fallen into the eye.

16. *Secretion of milk.* The milk is secreted in the glandular substance of the mammæ. The *tubuli lactiferi* arise in numerous small portions of the gland, called *granules.* As they approach the nipple, the ducts unite into twelve or fifteen, of considerable size, which terminate on the surface of the nipple by open mouths. The milk is for the purpose of nourishing the infant.

17. *Secretion of saliva.* The saliva is secreted by the parotid, submaxillary, and sublingual glands, and conveyed by their ducts into the mouth. Its use seems to be to assist the mastication and deglutition of the food, and its digestion in the stomach.

18. *Secretion of gastric juice.* The gastric juice, a fluid analogous to saliva, is supposed to be secreted partly by the extreme arteries of the villous coat of the stomach, and partly by the glands. It dissolves those substances which are nutritious to the animal.

19. *Secretion of the pancreatic juice.* The pancreatic juice is secreted in the acini of the pancreas, and conveyed by numerous small

ducts into the great pancreatic duct, which opens along with the biliary duct in the duodenum. It is supposed to assist in chylification, by diluting the acrimony of the bile.

20. *Secretion of bile.* The bile is secreted in the liver by the minute branches of the vena portæ into the *acini*, or *penicilli;* from thence it passes through the excretory ducts, called the *pori biliarii*, into the *hepatic duct;* this joining with the cystic duct, forms the *ductus communis choledochus*, which terminates in the duodenum. It is said by some that the blood of the vena portæ, having more carbon and hydrogen than that of the hepatic artery, is more proper for furnishing the elements of the bile.

21. *Excretion of bile.* When digestion is not going on, the opening of the *ductus choledochus* is closed by the contraction of the duodenum; and the bile not therefore finding access into it, regurgitates into the gall-bladder, where it acquires greater consistence. When the duodenum is distended with chyme, the irritation it produces is propagated to the gall-bladder, the parietes of which contract, and force the bile along the cystic duct into the ductus choledochus, and from thence into the duodenum.

22. *Use of the bile.* The bile precipitates the fæces from the chyle, and excites the peristaltic motion of the intestines.

23. *Secretion of urine.* The urine is secreted by the minute branches of the renal artery into the *corpora globosa*, or *cryptæ* of the kidney.

From thence it passes through the *tubuli uriniferi* into the *ducti bellini*, then through the *papillæ*, or *mammary processes*, into *calices*, or *infundibula*. These joining, form two or three principal tubes, which terminate in the *pelvis* of the kidney. The pelvis contracting forms the ureter, which carries it to the bladder.

24. The oblique manner in which the ureters penetrate the bladder prevents the urine from returning; the inner membrane of the bladder having valvular effect.

25. *Excretion of urine.* As soon as there is a certain quantity of urine in the bladder, we feel an inclination to discharge it. This we effect partly by the contraction of the bladder itself, and partly by the action of the abdominal muscles and diaphragm, which press the intestines against the bladder.

26. *Secretion of semen.* The semen is secreted by the minute branches of the spermatic arteries in the testicles. It passes through the *tubuli seminiferi* into the *vasa recta*; these, by their communications, form the *rete testis*. From the rete testis the semen passes by the *vasa efferentia* into the *coni vasculosi*, forming the head, or *globus major* of the epipidymis; then through the body of the epipidymis into its lower part, called *globus minor*, or *cauda*, which terminates in the *vas deferens*. The vas deferens opens with the *vesicula seminalis* into the urethra.

27. *Use of the vesiculæ seminales.* They are generally supposed to receive the semen, and to

effect some change upon it. By some they are considered to secrete a peculiar fluid.

28. *Use of the prostate gland..* The prostate gland secretes a peculiar fluid, which is discharged into the urethra by ten or twelve ducts. This secretion unites, and is discharged with the seminal fluid.

29. *Use of the uterus.* The use of the uterus seems principally for *menstruation,* and for the reception and nutrition of the *ovum.*

30. During coition, the uterus is supposed to open a little, and draw in the semen by aspiration; the Fallopian tube directs it to the ovarium; the contact of the semen determines the rupture of one of the ovarian vesicles, which passes into the uterus. Some authors imagine that it is not the semen that is carried to the ovarium, but only the vapour that exhales from it, or *aura seminalis.* Others think the semen is absorbed, and carried to the ovaria by means of the arteries.

OF THE BRAIN AND ORGANS OF SENSE.

31. *Of the physiology of the brain.* The uses of the brain in the animal economy are very numerous and important. It is the material organ of the *intellect,* or *mind*; it gives, through the medium of the nerves, the power of *voluntary motion;* it is the seat of *sensation* and of *sym-*

pathies, and exerts more or less influence upon all the vital phenomena.

32. The *sensations* are those functions destined to receive the impression of external objects, and to transmit them to the intellect.

33. They are five in number, viz. *vision*, *hearing*, *smell*, *taste*, and *touch*.

34. *Mechanism of vision.—Vide page* 128.

35. The *conjunctiva* protects the anterior surface of the eye; it secretes a fluid which mixes with the tears, and seems to have the same use; it supports the pressure when the eye is moved, and being always polished and humid, it gives much facility to motion.

36. The *sclerotic* is evidently to protect the interior parts of the eye, and to serve besides as a point of insertion, for many muscles that move the eye.

37. The *choroid* membrane is the most vascular coat of the eye, allowing the ramifications of the vessels, and secreting the pigmentum nigrum.

38. *The pigmentum nigrum* absorbs the light after it has traversed the retina; and thus prevents dazzling.

39. The dark matter, called *uvea*, on the posterior surface of the iris, is to absorb those rays that may be reflected by the polished surface of the crystalline.

40. The use of the *ciliary processes* is not perfectly understood. By some they are considered as secreting the aqueous humour. Haller

thinks they maintain the lens in the most advantageous position.

41. The *eyebrows* guard the eyes from external violence by the projection which they form; they protect the eyes from too much light, particularly when it comes from above, and they prevent perspiration from flowing towards or irritating the surface of the eye.

42. The *eyelids* during sleep cover the eyes, and thus preserve them from the contact of any foreign bodies floating in the air; they moderate the force of a too brilliant light; and by their regular and habitual motion, preserve the eyes from the effects of the continued contact of the air; and by their sudden closure, guard them from any shock.

43. The secretion from the *meibomian glands* facilitates the motion of the eyelids.

44. *Hearing*. The external ear, or *pinna*, collects the sonorous undulations, and directs them towards the *meatus auditorius externus.* This trumpet-like tube concentrates and conveys them to the *membrana tympani.* The sonorous waves striking against this membrane cause it to vibrate; this vibratory motion will be also given to the *malleus*, which is in contact with the membrane. The malleus moves the *incus ;* the incus, the *orbiculare ;* and this latter moves the *stapes.* Now the base of the stapes being attached to the membrane closing the *fenestra ovalis*, it is evident that the stapes must act the part of a piston; that is, compressing or dilating

the fluid in the *vestibule*, *semicircular canals*, and *cochlea*. The motion of this fluid conveys the impression to the *acoustic nerve* which lines the labyrinth. This nerve, receiving the impression, conveys it to the brain.

45. The *Eustachian tube* admits the free passage of air into and from the cavity of the tympanum, thus preserving a due balance with the external atmosphere, and enabling the membrana tympani, to move in obedience to the slightest impression.

46. The *mastoid cells* are supposed to augment the intensity of the sound.

47. The *fenestra rotunda*, and *aqueducts*, are supposed to allow the liquid of the labyrinth to suffer vibrations.

48. Of *taste*. To produce the sensation of taste, the food must be moistened and applied to the tongue. The minute branches of the *lingual* branch of the third division of the fifth pair receive the impression, and convey it to the brain.

49. Of *smell*. The air filled with the odorous effluvia which exhale from most bodies, being received into the nostrils by inspiration, carries these particles to the olfactory nerve, which is expanded over the surface of the pituitary membrane. By this means a kind of sensation is produced, which we call smell. To preserve the extremities of the nerves, and to lessen the too strong impression that would arise from the immediate contact of the odoriferous particles, mucus is secreted.

50. *Of the functions of the skin.* The *cutis vera*, or true skin, forms the organ of touch, besides which it is formed for absorption, and has a function analogous to that of the lungs, namely, the discharge of useless carbon from the system. The carbonic acid produced in the process, is formed by the union of the carbon with the oxygen of the atmosphere.

51. The *cuticle*, or *epidermis*, seems to blunt the otherwise too acute sensation of the cutis vera, and to defend from the impression of external bodies.

52. Of the *voice.* The air expelled from the lungs passes through the trachea and larynx. In the latter, the passage for it is much smaller than in the trachea, and the air is forced through a narrow slit, the two sides of which are vibrating planes, and which then produce sonorous undulations in the transmitted current of air. The intensity of the sound depends on the length of the *chordæ vocales*, and the force with which the air is expelled. The modifications of the voice depends upon the alterations produced on the opening of the glottis, by its muscles and ligaments.

CULLEN'S NOSOLOGY.

ARRANGEMENT OF CLASSES AND ORDERS.

Classis 1. Pyrexiæ.	Class 1st. Febrile Diseases.
Ord. 1. Febres.	Ord. 1. Fevers.
2. Phlegmasiæ.	2. Inflammations.
3. Exanthemata.	3. Eruptive fevers.
4. Hemorrhagiæ.	4. Hæmorrhages.
5. Profluviæ.	5. Fluxes.
Classis 2. Neuroses.	Class 2d. Nervous Diseases.
Ord. 1. Comata.	Ord. 1. Soporose Diseases.
2. Adynamia.	2. Defect of Vital Powers.
3. Spasmi.	3. Spasmodic Diseases.
4. Vesaniæ.	4. Mental diseases.

Classis 3. Cachexiæ.	Class 3d. Cachectic Diseases.
Ord. 1. Marcores.	Ord. 1. Emaciations.
2. Intumescentiæ.	2. Swellings.
3. Impetigines.	3. Cutaneous Diseases.

Classis 4. Locales.	Class 4th. Local Diseases.
Ord. 1. Dysæsthesiæ.	Ord. 1. Diseases of the Senses.
2. Dysorexiæ.	2. Depraved Appetites.
3. Dyscinesiæ.	3. Depraved Motions.
4. Apocenoses.	4. Increased Discharges.
5. Epischeses.	5. Obstructions.
6. Tumores.	6. Tumours.
7. Ectopiæ.	7. Protrusions.
8. Dialyses.	8. Solutions c Continuity.

CLASS I.

ORDER I.

FEBRES. FEVERS.

Contains 6 *genera.*

(α) Intermittentes -	intermittent fevers.
1. Tertiana - - -	tertian ague.

2.	Quartana	quartan ague.
3.	Quotidiana	every day ague.
	(β) Continuæ	continued fevers.
4.	Synocha	inflammatory fever.
5.	Typhus	nervous fever.
6.	Synochus	mixed fever.

ORDER II.

PHLEGMASIÆ. INFLAMMATIONS.

Contains 18 *genera*.

1.	Phlogosis	inflammation.
2.	Ophthalmia	——— of the eye.
3.	Phrenitis	————— brain.
4.	Cynanche	————— throat.
5.	Pneumonia	————— lungs.
6.	Carditis	————— heart.
7.	Peritonitis	————— peritoneum.
8.	Gastritis	————— stomach.
9.	Enteritis	————— bowels.
10.	Hepatitis	————— liver.
11.	Splenitis	————— spleen.
12.	Nephritis	————— kidneys.
13.	Cystitis	————— bladder.
14.	Hysteritis	————— womb.
15.	Rheumatismus	rheumatism.
16.	Odontalgia	toothach.
17.	Podagra	gout.
18.	Arthropuosis	pus in a joint.

ORDER III.

EXANTHEMATA. ERUPTIVE FEVERS.

Contains 10 *genera.*

1.	**Variola**	**smallpox.**
2.	**Varicella**	**chicken pox.**
3.	**Rubeola**	**measles.**
4.	**Scarlatina**	**scarlet fever.**
5.	**Pestis**	**plague.**
6.	**Erysipelas**	**St. Anthony's fire.**
7.	**Miliaria**	**miliary fever.**
8.	**Urticaria**	**nettle rash.**
9.	**Pemphigus**	**vesicular fever.**
10.	**Aphtha**	**thrush.**

ORDER III.

HÆMORRHAGIÆ. HÆMORRHAGES.

Contains 6 *genera.*

1.	Epistaxis	bleeding from the nose
2.	Hæmoptysis	spitting of blood.
3.	Hæmorrhois	piles.
4.	Menorrhagia	overflow of the menses
5.	Hæmaturia	voiding of blood by urine
6.	Hæmatamesis	vomiting of blood.

ORDER V.

PROFLUVIÆ. FLUXES.

Contains 2 *genera.*

1.	Catarrhus	catarrh.
2.	Dysenteria	dysentery.

CLASS II.

NEUROSES. NERVOUS DISEASES.

ORDER I.

COMATA. SOPOROSE DISEASES.

Contains 2 *genera.*

1. Apoplexia - - - apoplexy.
2. Paralysis - - - palsy.

ORDER II.

ADYNAMIA. DEFECT OF PHYSICAL POWERS.

Contains 4 *genera.*

1. Syncope - - - fainting.
2. Dyspepsia - - - indigestion.
3. Hypochondriasis - low spirits.
4. Chlorosis - - - green-sickness.

ORDER III.

SPASMI. SPASMODIC DISEASES.

Contains 17 *genera.*

1. Tetanus - - - - cramp.
2. Trismus - - - - locked jaw.
3. Convulsio - - - convulsions.
4. Chorea - - - - St. Vitus's dance.
5. Raphania - - - raphany.
6. Epilepsia - - - epilepsy.
7. Palpitatio - - - palpitation.

8. Asthma	asthma.
9. Dyspnœa	difficult breathing.
10. Pertussis	hooping cough.
11. Pyrosis	water brash.
12. Colica	colic.
13. Cholera	cholera.
14. Diarrhœa	purging.
15. Hysteria	hysteric diseases.
16. Hydrophobia	canine madness.
17. Diabetes	excessive flow of ur

ORDER III.

VESANIÆ. MENTAL DISEASES.

Contains 4 *genera.*

1. Amentia	fatuity.
2. Melancholia	melancholy.
3. Mania	madness.
4. Oneirodynia	nightmare.

CLASS III.

CACHEXIÆ. CACHECTIC DISEASES.

ORDER I.

MARCORES. UNIVERSAL EMACIATION

Contains 3 *genera.*

1. Tabes	wasting away.
2. Atrophia	nervous consumpti
3. Pthisis	pulmonary consum

ORDER II.

INTUMESCENTIÆ. SWELLINGS.

Contains 13 *genera.*

	(α) Adiposæ	fatty swellings.
1.	Polysarcia	obesity.
	(β) Flatulosæ	flatulent swellings.
2.	Pneumatosis	windy swellings.
3.	Tympanites	drum belly.
4.	Physometra	windy swelling of the uterus.
	(γ) Aquosæ	dropsies.
5.	Anasarca	general dropsy.
6.	Hydrocephalus	water in the head.
7.	Hydrorachitis	———— spine.
8.	Hydrothorax	dropsy in the chest.
9.	Ascites	———— belly.
10.	Hydrometra	———— uterus.
11.	Hydrocele	———— tunica vaginalis
	(δ) Solidæ	swellings of the solids.
12.	Physconia	enlargement of the abdomen.
13.	Rachitis	rickets.

ORDER III.

IMPETIGINES. CUTANEOUS DISEASES.

Contains 8 *genera.*

1.	Scrofula	scrofula.

2. Syphilis - - -	venereal disease.
3. Scorbutus - - -	scurvy.
4. Elephantiasis - -	elephant-like eruption.
5. Lepra - - - -	leprosy.
6. Frambæsia - -	yaws.
7. Trichoma - - -	plaited hair.
8. Icterus - - -	jaundice.

CLASS IV.

LOCALES. LOCAL DISEASES.

ORDER I.

DYSÆSTHESIÆ. DISEASES OF THE SENSES.

Contains 9 *genera.*

1. Caligo - - - -	cataract.
2. Amaurosis - -	loss of sight. Gutta serena.
3. Dysopia - - -	bad sight.
4. Pseudoblepsis -	false vision.
5. Dysecœa - - -	deafness.
6. Paracusis - - -	wrong hearing.
7. Anosmia - - -	loss of the sense of smell.
8. Agheustia - - -	——————— taste.
9. Anæsthesia - -	——————— touch.

ORDER II.

DYSOREXIÆ. ERROR OR DEFECT IN APPETITE.

Contains 9 *genera.*

(α) Appetitus erronei	(α) Depraved appetites.
1. Bulimia - - -	insatiable appetite.
2. Polydipsia - -	excessive thirst.
3. Pica - - - -	depraved appetite.
4. Satyriasis - - -	incontinence in men.
5. Nymphomania -	———— women.
6. Nostalgia - - -	longing for home.
(β) Appetitus deficientes	(β) Defective appetite.
7. Anorexia - - -	diminished appetite.
8. Adipsia - - -	want of thirst.
9. Anaphrodisia - -	impotence.

ORDER III.

DYSCINESIÆ. IMPEDED MOTION FROM IMPERFECTION OF AN ORGAN.

Contains 7 *genera.*

1. Aphonia - - -	loss of voice.
2. Mutitas - - -	dumbness.
3. Paraphonia - -	altered voice.
4. Psellismus - -	defect in speech.

5. Strabismus	squinting.
6. Dysphagia	difficult deglutition.
7. Contractura	cramp.

ORDER IV.

APOCENOSES. INCREASED DISCHARGES.

Contains 6 *genera.*

1. Profusio	loss of blood.
2. Epidrosis	excessive perspiration.
3. Epiphora	excessive flow of tears.
4. Ptyalismus	salivation.
5. Enuresis	involuntary flow of urine.
6. Gonorrhœa	a preternatural discharge of fluid from the urethra.

ORDER V.

EPISCHESES. OBSTRUCTIONS.

Contains 5 *genera.*

1. Obstipatio	costiveness.
2. Ischuria	suppression of urine.
3. Dysuria	difficult discharge of urine.
4. Dyspermatismus	difficult discharge of semen.
5. Amenorrhœa	stoppage of the menses.

ORDER VI.

TUMORES. TUMOURS.

Contains 13 *genera.*

1.	Aneurisma - -	aneurism.
2.	Varix - - - - -	dilated vein.
3.	Ecchymoma - -	extravasation.
4.	Schirrus - - -	hard indolent tumour.
5.	Cancer - - -	cancer.
6.	Bubo - - - - -	a swelled gland.
7.	Sarcoma - - -	a fleshy excrescence.
8.	Clavus - - -	a corn.
9.	Lupia - - - - -	encysted tumour.
10.	Ganglion - - -	tumour in the sheath of a tendon.
11.	Hydatis - - -	hydatids.
12.	Hydarthrus - -	white swelling.
13.	Exostosis - - -	a morbid hard tumour of a bone.

ORDER VII.

ECTOPIÆ. PARTS DISPLACED.

Contains 3 *genera.*

1.	Hernia - - -	rupture.
2.	Prolapsus - - -	an uncovered protrusion of a part.
3.	Luxatio - - -	dislocation of a bone.

ORDER VIII.

DIALYSES. VISIBLE SOLUTIONS OF CONTINUITY.

Contains 7 genera.

1.	Vulnus - - -	a wound.
2.	Ulcus - - - -	an ulcer.
3.	Herpes - - -	tetters.
4.	Tinea - - - -	scald head.
5.	Psora - - - -	itch.
6.	Fractura - - -	fracture.
7.	Caries - - - -	carious bone.

PRACTICE OF MEDICINE.

CLASS I.

PYREXIÆ. (FEBRILE DISEASES.)

ORDER I.

FEBRES. FEVERS.

1. Character. At first, a sensation of chilliness with cold surface, succeeded by increased heat and full pulse, a flushed countenance, thirst, debility, languor, and pain in the limbs, loss of appetite, nausea, vomiting, and restlessness. Tongue white, and the various secretions of the body disordered.

2. Fevers are usually divided into idiopathic and symptomatic, but it is doubtful whether any fever exists without some previous local congestion or inflammation.

3. Idiopathic fevers are divided into intermittent and continued fevers.

FEBRES INTERMITTENTES. INTERMITTENT FEVERS.

4. Character. Distinct paroxysms of fever,

between which there is an apparently perfect intermission or period free from fever.

5. The paroxysm of an intermittent consists of three stages; the cold, the hot, and the sweating stage.

6. The *cold stage* is indicated by languor and listlessness; pale constricted skin, impaired sensibility, diminished secretion; small, frequent, and irregular pulse; a sensation of cold over the whole body; the teeth chatter, the limbs tremble, and there is a general convulsive shaking.

7. *Hot stage.* After an uncertain space of time, heat gradually comes on, and is followed by a general flush of the whole body. The sensibility becomes acute; pulse quick, strong, and hard; tongue white; urine scanty and high-coloured; nausea and vomiting; confusion of thought, or even delirium.

8. *Sweating stage.* After an indefinite time, a moisture breaks out upon the face and neck, and by degrees extends over the whole body. The febrile symptoms gradually diminish; the pulse becomes natural; the feeling of weakness goes off; the heat of the skin, thirst, and headach diminish; the appetite returns, and the secretions are restored to their healthy condition.

9. The duration of the paroxysm is very uncertain. It generally lasts from six to eight hours.

10. Intermittent fevers are of three kinds, denominated quotidian, tertian, and quartan.

11. In the quotidian, the febrile paroxysms

recur daily in the morning, and are in general the longest.

12. In the tertian, the paroxysms recur every other day in the forenoon. The hot fit is generally the longest.

13. In the quartan, the paroxysms recur every third day in the afternoon. The cold stage is the longest and most violent, but upon the whole the paroxysm is the shortest.

14. Predisposing causes. Cold combined with moisture; debility of the system, from poor diet, fatigue, watching, and preceding disease, and likewise a depressed state of mind.

15. The exciting cause is the effluvium from marshy soils, called marsh miasma.

16. The *treatment* of these fevers is of two kinds, the palliative and curative. The first consists in modifying and shortening the paroxysms, the latter in preventing their return.

17. In the cold stage, give stimulants and diaphoretics, such as the acetate of ammonia, Dover's powder, &c. The foot bath may also be used. In the hot stage, give saline cool acidulated drinks, and bleed from the arm, if bloodletting appears much indicated.

18. In the intermission, various vegetable and mineral tonics are given to prevent the recurrence of the paroxysm.

19. The vegetable tonics used for this purpose are, the *cinchona*, *cusparia*, *simarouba*, *willow*, and *cascarilla* barks.

20. The cinchona is the most efficacious, and

seems to possess a specific action in arresting the paroxysms.

21. The proximate cause of intermittent fever is not subdued by simply arresting the paroxysms. There are certain states of the system that must be relieved, otherwise the paroxysms will soon return with as much virulence as ever.

22. Intermittents are connected

With an inflammatory state of some viscus or system of the body;

With a congestive state of some viscus or system; or

With atony or debility of some part of the body, requiring the assistance of stimulants.

23. The most common form of giving the cinchona bark is in powder: a drachm to two drachms may be given every three or four hours; so that nearly two ounces may be taken between the paroxysms. The sulphate of quinine has been found equally, and even more efficacious, and is much less likely to derange the stomach. It may be given in doses of two grains to five grains every three or four hours, during the intermission.

24. If there should be any phlogistic diathesis, it must be subdued by bleeding, purging, and the usual antiphlogistic remedies.

25. It is sometimes necessary to combine the cinchona powder with aromatics, when it disagrees with the stomach. Cinchona is also given in decoction and extract, but with much less efficacy.

26. When intermittent fever exists in connexion with debility of the system, wine and cordials may be administered.

27. The mineral tonics used in the cure of intermittents are, the white arsenic, sulphate of zinc, and sulphate of copper.

28. The liquor arsenicalis is sometimes given in doses of four or five minims, every six hours.

29. Emetics and stimulants, given just before the paroxysm, have occasionally succeeded in preventing its accession.

30. Remittent fevers likewise arise from malaria. They have no apparently perfect intermission, but have evident periods of paroxysms.

FEBRES CONTINUÆ. CONTINUED FEVERS.

31. Continued fevers are divided by Dr. Cullen into three kinds:

First, synocha.
Second, typhus.
Third, synochus.

SYNOCHA. INFLAMMATORY FEVER.

32. *Symptoms.* Rigors, lassitude, followed by flushings and excessive heat. Full and frequent pulse. Countenance and eyes suffused, pain in the head and back. Tongue dry and white; thirst; urine high coloured; costiveness; excited sensibility; quick respiration, and great anxiety.

33. *Causes.* Sudden change of temperature, over-exertion, alarm, and the abuse of liquors; suppression of usual evacuations.

34. *Diagnosis.* It is distinguished from typhous fever by the full, regular pulse, whiteness of the tongue, and high-coloured urine.

35. *Treatment.* Abstract blood, locally and generally, according to the age and strength of the patient, and violence of the disease; give purgatives, especially the saline ones; apply blisters; give diaphoretics and sudorifics, as the acetate of ammonia, the antimonial preparations, and Dover's powder. Keep the patient cool, and if the skin be hot and dry, the body may be sponged with cold vinegar and water.

36. Typhus is divided by Dr. Cullen into typhus mitior and typhus gravior.

TYPHUS MITIOR. NERVOUS FEVER.

37. *Symptoms.* Languor, chilliness, and depressed spirits, followed by pain felt in the head, and most parts of the body; confusion of thought; vomiting; pulse quick and weak, sometimes intermittent; the tongue becomes dry, brown, and tremulous; the countenance is expressive of anxiety, and the cheeks are tinged with a circumscribed blush; urine pale and watery; muttering delirium; subsultus tendinum; diarrhœa; involuntary excretions; cold extremities, and death ensues.

38. *Causes.* Powerful emotions of the mind; exposure to cold and moisture; excessive fatigue, and contagion.

39. *Treatment.* In the commencement, give an emetic. Bleed moderately from the arm, or apply eight or ten leeches to the temples; apply a blister to the nape of the neck, or to any part where more indicated; give diaphoretics, and mild purgatives, and sponge the body with vinegar and water, if the skin be very hot and parched. The horizóntal posture must be insisted upon, and the patient must abstain entirely from animal food; these precautions apply to all kinds of continued fevers.

40. When the violence of the symptoms has abated, give cinchona, serpentary, and other tonics, and opium to procure sleep.

TYPHUS GRAVIOR. PUTRID FEVER.

41. *Symptoms.* The same as in typhus mitior at first, but run through their stages more rapidly. Symptoms of malignancy soon appear. The tongue is covered with a brown or black crust; the fæces pass involuntarily; hæmorrhage breaks out; petechiæ shew themselves; the pulse sinks and intermits; the skin is cold; hiccup comes on, and death follows.

42. *Causes.* The same as those of typhus mitior; contagion.

43. *Treatment.* The same as that for typhus

mitior, but with greater promptitude and decision. Cold affusions, if the skin be very hot. Great cleanliness should be observed, and the room should be well ventilated. Tonics and antiseptics are to be given in the advanced stage of the fever. Compound spirit of sulphuric æther is highly recommended in such cases.

SYNOCHUS. MIXED FEVER.

44. *Symptoms.* The same in its commencement as those of synocha, and in the latter stage resembling those of typhus. The pulse is frequent and full; the skin hot and dry; there is thirst; the tongue is white, becomes afterwards brown, and the usual symptoms of typhus follow.

45. *Causes.* Cold combined with moisture, and a peculiar state of atmosphere.

46. The *treatment*, in its commencement, should be mildly antiphlogistic. In the advanced stage of the disease, tonics and antiseptics must be administered.

ORDER II.

PHLEGMASIÆ. INFLAMMATIONS.

47. The characters of inflammation are pain, heat, redness, and swelling.

48. Internal inflammation is judged of by the

local pain, increased on pressure; the functional disorder; the pyrexia, and general derangement of the system. The blood is always more or less buffy in internal inflammations.

49. Inflammation terminates in resolution, suppuration, gangrene and effusion, and increased secretion.

50. *Resolution* implies the subsidence of the inflammation, without any apparent organic alteration.

51. By *suppuration* is meant the formation of a new fluid, called pus. When it takes place internally, it is known by, 1st, the pain becoming of a throbbing kind; 2d, a sensation of weight and fullness in the part; 3d, the pulse continuing frequent, but becoming soft and full; 4th, the occurrence of rigors and night sweats, or hectic fever.

52. By *sphacelus, gangrene*, or *mortification*, is meant the death of the part, known by, 1st, the sudden cessation of pain; 2d, a sinking and irregular pulse; 3d, the countenance becoming cadaverous and wild; 4th, delirium.

53. The *exciting causes* of inflammation are, mechanical and chemical irritants; cold; morbid poisons, and metastasis.

54. *Treatment.* First remove the exciting cause, if it still exists; use bloodletting, both general and local, according to the strength of the patient and violence of the disease; give purgatives, especially saline ones, nauseants and sedatives, as digitalis and tartarized anti-

mony; diaphoretics and refrigerants; apply blisters and rubefacients; and locally cold; as water, snow, ice, diluted spirits, &c. Great attention should be paid to the diet, which should be of the simplest and mildest kind.

55. When suppuration has taken place, the state of the general health must be attended to. In some cases, moderate evacuations are required.

56. Internal gangrene requires the exhibition of wine, bark, ammonia, &c.

PHRENITIS. INFLAMMATION OF THE BRAIN

57. *Symptoms.* High fever; pulse very rapid; tongue white; excruciating pain is felt in the head; intolerance of light and sound; frightful dreams; excessive sensibility and restlessness. Countenance flushed; eyes suffused and staring; delirium, and sometimes coma.

58. *Causes.* Violent passions of the mind; coup de soleil; abuse of spirituous liquors.

59. *Diagnosis.* Phrenitis is known by the high arterial excitement; the early and fierce delirium; excessive sensibility, and restlessness.

60. *Treatment.* Abstraction of blood by a large orifice from the arm, and in large quantity; the head to be shaven, and cold lotions to be constantly applied; confinement in a dark room. The rest of the treatment, as for other inflammations, excepting the use of emetics

and nauseants, which aggravate some of the symptoms.

CYNANCHE TONSILLARIS. INFLAMMATORY SORE THROAT.

61. *Symptoms.* Pyrexia; redness and swelling of the tonsils and fauces; deglutition impeded; voice indistinct; tongue white and brown; the fauces occasionally become covered with white spots, which terminate in sloughs.

62. *Treatment.* The same as for inflammation generally. Leeches may be applied externally; emetics are very useful; the vapour of warm vinegar and water may be inhaled by the patient.

CYNANCHE MALIGNA. PUTRID SORE THROAT.

63. *Symptoms.* Shivering, anxiety, and great restlessness. The fauces are tumid, and of a deep red colour, interspersed with white specks, which are also found in the mouth. The pulse is quick but weak, and sometimes irregular; pain at the throat; the voice is indistinct, and deglutition very painful; tongue dry, and covered with a dark thick fur; diarrhœa, and great prostration of strength; a papulous eruption breaks out about the neck of a fiery red colour, and gradually extends over the whole body. The ulceration increases, and extends to

the alimentary canal or trachea; gangrene supervenes, and death follows.

64. *Diagnostic character.* The typhoid fever; the presence of the eruption about the throat, and ulceration of the fauces.

65. *Treatment.* At the commencement of the attack, leeches may be applied to the throat, and followed by a blister; an emetic also has been found serviceable; but as soon as an evident depression of the system takes place, the strength must be supported by stimulants and aromatics, as wine and bark, with cinnamon, and the like. The room should be well ventilated, and all effluvia removed; light nourishment should be administered, and the throat may be gargled with stimulant astringent gargles. The disease generally arrives at a crisis about the fifth or seventh day.

CYNANCHE PAROTIDÆA. MUMPS.

66. *Symptoms.* Pyrexia; inflammatory enlargement of the parotid and submaxillary glands; deglutition, respiration, and articulation, somewhat impeded; a metastasis sometimes takes place, to the testis of the male, or to the mamma of the female. The system, generally, is not much disordered. This disease is sometimes epidemic.

67. *Treatment.* There is little to be done, beyond the use of common antiphlogistics.

Emetics are very serviceable; some apply leeches to the tumour.

CYNANCHE TRACHEALIS. CROUP.

68. *Symptoms.* Pyrexia; difficulty of breathing, attended with a peculiar hissing cough; great anxiety; face and neck flushed; the voice acquires a peculiar sound, similar to the crow of the cock; cough dry, becomes subsequently freer, a viscid matter being frequently expectorated with great pain; croup generally occurs in children between the first and third year of age. The fatal termination takes place about the fourth or fifth day.

69. *Causes.* Cold and exposure to a damp atmosphere, particularly in winter and spring.

70. *Treatment.* Apply leeches to the throat; abstract blood from the arm or jugular vein. An emetic is serviceable, and nauseants should be always administered; give cathartics; and, in some cases, apply a blister; calomel, in large doses, has been recommended, and found successful.

PLEURITIS. INFLAMMATION OF THE PLEURA.

71. *Symptoms.* Acute pain in some part of the chest, increased by a deep inspiration; immobility of the ribs, corresponding with the affected part; respiration, hurried in inspiration, but expiration is comparatively slow; pyrexia;

white tongue; quick, hard, and contracted pulse; cough; difficulty of lying on the affected side.

72. *Treatment.* Take blood from the arm, and apply several leeches over the affected part of the chest; a blister may be applied; give tartarized antimony, so as to excite nausea, digitalis, and purgatives.

PERIPNEUMONIA. INFLAMMATION OF THE SUBSTANCE OF THE LUNGS.

73. *Symptoms.* The symptoms bear some resemblance to those of pleuritis; the pain is more obtuse, and there is a greater sensation of oppression. The respiration is quick and difficult, and the countenance often assumes a purple colour. The pulse is quick and full. Suppuration sometimes takes place, and is known by the existence of rigors, pain more fixed, and hectic fever.

74. *Treatment.* Bleed copiously from the arm, and locally by leeches or cupping; give a brisk purgative, and then much reliance may be placed on large repeated doses of tartarized antimony, and ipecacuanha may be given to induce expectoration.

CARDITIS, PERICARDITIS. INFLAMMATION OF THE HEART AND PERICARDIUM.

75. *Symptoms.* Inflammation of the heart and pericardium so generally exist together, that

cases are very rare of their being affected separately. There is palpitation and syncope; pulse quick and irregular; a troublesome, distressing cough, without expectoration corresponding to the exertion. In the commencement, syncope is easily brought on by going up stairs.

76. *Treatment.* Bleeding generally and locally, by leeches or cupping; and in more chronic cases, a seton has been found of service. The recumbent position is absolutely requisite.

HEPATITIS. INFLAMMATION OF THE LIVER.

77. *Symptoms* of inflammation of the peritoneal covering of the liver. Pain felt in the right hypochondrium, increased upon pressure; pyrexia; tongue covered with a yellowish brown fur; difficult breathing; dry cough; a sympathetic pain in the shoulder, varying according to the part affected; vomiting; and a yellowish tinge of the skin. At the commencement, there is diarrhœa; but, if the inflammation be very acute, the secretion of bile is suspended, and the fæces are of a clayey colour. The symptoms of inflammation of the substance of the liver are very much the same; the pain is more obtuse; there is jaundice; the urine has a deep yellow colour; the tongue is furred; the pulse quick and hard, and there is great gastric irritability. The terminations are the same as in other inflammations.

90. *Diagnostic characters.* Retraction of the testicle, and vomiting; pain not materially increased by the erect position.

91. *Treatment.* General and local bloodletting by leeches or cupping, cathartics, diaphoretics, and copious mucilaginous drinks; warm bath. Blisters are improper, as they are apt to induce strangury.

CYSTITIS. INFLAMMATION OF THE BLADDER.

92. *Symptoms.* Pyrexia; pain and soreness about the perineum, with pain, heat, and sometimes swelling in the hypogastrium; frequent attempts to make water, which is evacuated high coloured, in small quantity, and with great pain; tenesmus, sickness, and vomiting, and occasionally delirium.

93. *Treatment.* The same as for nephritis.

HYSTERITIS. INFLAMMATION OF THE UTERUS.

94. *Symptoms.* Pyrexia; pain and tension in the hypogastric region, the pain being increased upon pressure; vomiting; when the inflammation is slight, there is a frequent desire to pass the urine and fæces; if the inflammation runs high, there is constipation and dysuria.

95. *Treatment.* The usual antiphlogistic treatment.

PERITONITIS. INFLAMMATION OF THE PERITONEUM.

96. *Symptoms* resemble those of enteritis very closely. Pyrexia; pain in the abdomen more general; tension and swelling, and great sensibility evinced upon touch; pulse frequent, wiry, and hard; some constipation; the knees are generally drawn up to take off the tension, and the simple pressure of the bedclothes is insupportable.

97. *Diagnostic characters.* The diffusion of the pain; the tenderness upon pressure; and the great heat of the abdomen.

98. *Treatment.* The same as that for enteritis. Much reliance is placed on large doses of calomel and opium by some practitioners.

RHEUMATISMUS. RHEUMATISM.

99. *Symptoms.* Pyrexia; usual symptoms of synocha; restlessness; swelling, redness, and tension of the larger joints; urine high-coloured; occasionally profuse perspiration. There is a tendency in the inflammation to change its seat frequently, from one joint to another.

100. The chronic rheumatism is unattended with redness of the part, which is rigid and painful on pressure.

101. *Diagnostic character.* The sudden inflammation of the large joints, attended with inflammatory diathesis, and coming on without previous disorder of the system.

102. *Treatment.* Common antiphlogistic; bloodletting; purgatives; colchicum; diaphoretics; narcotics and fomentations are of great benefit. Chronic rheumatism is to be combated by colchicum, guaiacum, Dover's powder, warm bath, and small repeated doses of mercury.

PODAGRA. GOUT.

103. *Symptoms.* Pyrexia; disordered state of the digestive organs; pain, swelling, and redness of the smaller joints, most frequently of the great toe. The violence of the symptoms recurs in paroxysms. The disease seems to be hereditary. In some cases, the pain of the joints is less severe, and some viscus is more particularly attacked, constituting *podagra atonica.* In *podagra retrograda,* the swelling suddenly disappears from the joints, and a metastasis takes place to the stomach or some other viscus.

104. *Treatment.* Antiphlogistic. Bloodletting is seldom required; cooling laxatives may be given, and the affected part may be enclosed in flannel, so as to excite diaphoresis. The colchicum is found almost a specific in removing the acuteness of the pain.

105. Chronic gout must be treated by attention to diet, abstinence from heating liquors, gentle exercise, mild aperients, and sudorifics.

ORDER III.

EXANTHEMATA. ERUPTIVE FEVERS.

ERYSIPELAS. ST. ANTHONY'S FIRE.

106. *Symptoms.* Erysipelas always commences with febrile symptoms, which accompany it, till its termination. There is nausea and vomiting; pulse generally hard and full. About the second or third day, the eruption appears of a deep red colour; the inflamed part is much swollen, and has a sensation of tingling and great heat. When the head and face are attacked, (which is of frequent occurrence) great pain is felt, and confusion of thought and delirium ensue. The face becomes very œdematous, and the eyes are closed. The eruption terminates in a few days by desquamation, phlyctenæ or vesicles, and the symptoms gradually subside. Œdematous effusion is not an unfrequent consequence.

107. *Causes.* Checked perspiration; abuse of liquors; but most frequently some irritating matter in the primæ viæ.

108. *Treatment.* The treatment, at first, must be purely antiphlogistic, modified according to the age and constitution of the patient. Emetics at the commencement are generally very useful, and should be followed by a dose of castor oil, and subsequently saline purges.

Wine, bark, and stimulants in general, may be given to debilitated persons. When the violence of the inflammation has abated, cold spirituous lotions may be applied to the part affected.

VARIOLA. SMALLPOX.

109. *Symptoms.* This disease commences with rigors; pain referred to the back and epigastrium, and vomiting. On the third day, an eruption shews itself about the face and neck, and afterwards over the whole body. About the fifth day, vesicles form in each spot; the vesicles lose their elevation, and a puriform fluid is effused in each; on the eighth day, the pustules are completely formed, and about the eleventh, begin to break and dry up.

110. Secondary fever sometimes continues to the seventeenth day.

111. Confluent smallpox is distinguished by the pustules being blended together.

112. *Diagnostic character.* The drowsiness, and pain in the epigastric region. The peculiar eruption.

113. *Treatment.* The same as for inflammatory fevers in general; the strength must not be too much lowered by bloodletting, which is only required in excessive local determinations. When the fever recedes, tonics, stimulants, and nourishment must be given. A cool, well-ventilated room is very requisite.

VARICELLA. CHICKENPOX.

114. *Symptoms.* Pyrexia; an eruption of small red protuberances, containing a vesicle without depression. The fluid in the vesicle becomes white, and about the third day, straw-coloured; on the fifth and sixth day, the disease begins to subside very fast. The disease cannot be propagated by inoculation.

115. *Diagnostic character.* Slight fever. The vesicles contain serum on the first day of the eruption. No suppuration takes place; the eruption does not remain entire on the fifth day.

116. *Treatment.* Gentle laxatives, refrigerants, and diaphoretics, proportionate to the degree of symptoms.

MORBILLI, OR RUBEOLA. MEASLES.

117. *Symptoms.* Pyrexia; cough; hoarseness; difficulty of breathing; sneezing; a flow of tears, and mucous discharge from the nose; drowsiness; fourth day, an eruption of dingy-red prominent spots, beginning on the face and neck, and afterwards spreading over the whole body. On the fifth or sixth day, the eruption becomes darker, and in a few days disappears, and leaves desquamation of the cuticle.

118. *Diagnostic character.* The dry cough;

the drowsiness; sneezing; coryza; the red tumid state of the eyes, attended with a discharge of tears.

119. *Treatment.* Keep the patient in a cool equable temperature; give diaphoretics and refrigerants; saline purgatives; general and local bloodletting, if the local symptoms run high; and a blister to the chest, if the lungs are oppressed.

MILIARIA. MILIARY FEVER.

120. *Symptoms.* Pyrexia; great languor and depression of spirits; laborious respiration; heat of body; and a tingling sensation is felt over the skin; profuse sweat, of a sour, unpleasant smell. Pimples, about the size of millet seeds, appear about the body, filled with a whitish, serous fluid. In two or three days the vesicles break, and desquamation follows.

121. *Diagnostic character.* The profuse unpleasant perspiration: the eruption.

122. *Treatment.* Cool air, and light clothing; gentle saline purgatives; tonics, with sulphuric acid, unless inflammatory symptoms should arise to contra-indicate them.

SCARLATINA SIMPLEX ET ANGINOSA. SCARLET FEVER.

123. *Symptoms.* Commencement, synocha, with its usual symptoms; second or third day, a deep red or scarlet rash appears upon the skin,

and lasts three or four days, followed by desquamation.

124. Scarlatina anginosa is much more severe, and is attended with inflammation of the fauces. There is sometimes superficial ulceration of the tonsils and soft palate. Scarlatina is frequently succeeded by anasarca.

125. *Diagnostic character.* Inflammation of the fauces, colour of the eruption, and the absence of the catarrhal symptoms.

126. *Treatment.* Very simple. The patient should be kept quite cool, take light food and cool drinks. Laxatives may be given.

127. In scarlatina maligna, the use of purgative medicines and the cold affusion are principally to be depended on. At the commencement, an emetic may be administered. Stimulating gargles are of service. In the latter stage of the disease, tonics are useful.

URTICARIA. NETTLE RASH.

128. *Symptoms.* Slight fever; on the second or third day white pimples appear, surrounded by a red areola, or general redness of the skin, resembling the effects of the stinging of nettles. The eruption appears and disappears irregularly on most parts of the body. After continuing for about a week, it goes off, and desquamation follows.

129. *Treatment.* Give a gentle emetic, and mild cathartics afterwards.

PEMPHIGUS. VESICULAR FEVER.

130. *Symptoms.* Usual symptoms of fever, with full pulse, and sometimes delirium. An eruption of vesicles, called *bullæ*, approaching to the size of walnuts, and surrounded by an inflamed base. The blisters break in a few days, discharge a yellow ichorous fluid, and soon disappear.

131. *Treatment.* An emetic, saline purgatives, warm bath, and diaphoretics.

APHTHA. THE THRUSH.

132. *Symptoms.* Slight febrile disorder; small white or pearl-coloured vesicles on the tongue, lips, and the interior surface of the mouth and throat, in considerable numbers, proceeding to superficial ulceration, and terminating by an exfoliation of the cuticle. In some cases it extends along the whole alimentary canal, producing diarrhœa. The anus very often appears inflamed, and, in females, the vagina.

133. *Treatment.* Use of emetics, gentle purgatives, emollient clysters, and tonic and stimulant gargles.

ORDER IV.

HÆMORRHAGIÆ. HÆMORRHAGES.

EPISTAXIS. BLEEDING AT THE NOSE.

134. *Symptoms.* Epistaxis is generally connected with a determination of blood to the head, and its concomitant symptoms, headach, flushed countenance, sensation of heaviness over the eyes, vertigo, and manifestation of common febrile symptoms. Profuse discharge of blood from the nose, generally from one nostril only.

135. *Treatment.* Erect posture, with head inclined backwards; exposure to cool air; cold applications to the head and face; bloodletting; astringent injections. Plugging up the bleeding nostril with dossils of lint is most effectual.

HÆMOPTYSIS. SPITTING OF BLOOD.

136. *Symptoms.* Feeling of weight and oppression of the chest; a titillation of the larynx, trachea, or bronchi is felt: dry cough, and difficulty of breathing; pulse generally full and hard; tongue rather white; a saltish taste in the mouth is experienced; in a fit of coughing, a profusion of blood is brought up, which is generally of a florid red colour, and frothy.

137. *Treatment.* Bloodletting from the arm; cold drinks; cool air. Sulphuric acid is very serviceable; digitalis.

HÆMATEMESIS. VOMITING OF BLOOD.

138. *Symptoms.* Vomiting of clotted blood of dark colour, coming on rather suddenly, and preceded by a sensation of weight and pain in the stomach.

139. *Treatment.* Bloodletting; acidulated cool drinks, and mild diet; purgatives, and astringents in general; but more particularly the acids. Superacetate of lead, &c.

HÆMATURIA. VOIDING OF BLOOD THROUGH THE URETHRA.

140. *Symptoms.* Pain, with a sensation of weight in the loins, and in the region of the kidneys. Urine is evacuated, mixed with blood. It is generally a symptom of other diseases.

141. *Treatment.* Will depend on the precise seat of the affection; therefore the antiphlogistic remedies must be adapted to the part affected.

HÆMORRHOIS. THE PILES.

142. *Symptoms.* Tumours at the verge of the anus, very sensible to pain on going to stool;

pain in the back and loins; discharge of blood from inside the rectum.

143. *Treatment.* Leeches applied to the part; cold lotions, and occasionally active antiphlogistic measures are necessary. The bowels should be kept gently open by oleaginous purgatives, or the preparations of sulphur.

144. In the chronic form of piles, without much pain, astringent stimulant applications are requisite, as powdered galls, in ointment; oak-bark; balsam of copaiva, &c. Medicines of similar action may at the same time be taken internally.

MENORRHAGIA. IMMODERATE FLOW OF THE MENSES.

145. *Symptoms.* Great discharge of menstrual fluid, attended with pain in the back and loins, and sometimes with a plethoric state of the system, with the usual symptoms of fever; but sometimes united with debility of the whole system.

146. *Treatment.* For the plethoric, blood-letting and purgatives; but to the debilitated, cooling astringents must be applied; horizontal position; cold water applied to the pubes.

ORDER V.

PROFLUVIA. FLUXES, WITH FEVER.

CATARRHUS. A COLD.

147. *Symptoms.* Sneezing; increased secretion of mucus from the nose and fauces; pyrexia; cough, and some pain in the head and chest. It is said to be contagious.

148. *Treatment.* Simple antiphlogistic remedies.

DYSENTERIA. DYSENTERY.

149. *Symptoms.* Pyrexia; flatulence, and griping of the bowels; frequent inclination to go to stool; tenesmus; nausea, or vomiting; frequent evacuations from the rectum of mucus, mixed with fæces or blood; sometimes films, like membranes or fat, are passed, with portions of indurated fæces; great debility, and violent sensation of bearing down.

150. *Treatment.* Bloodletting; purgatives, such as rhubarb, calomel, and sulphate of magnesia, castor oil, opium, with antimonials, ipecacuanha, and astringents.

CLASS II.

NEUROSES. NERVOUS DISEASES.

ORDER I.

COMATA. SOPOROSE AFFECTIONS.

APOPLEXIA. APOPLEXY.

151. *Symptoms.* Loss of power, sense, and motion; comatose state; stertorous breathing; countenance flushed, or livid; pupil dilated; foaming at the mouth; pulse full, and sometimes slow. The symptoms preceding are such as arise from determination of blood to the head. Paralysis is a frequent consequence of it.

152. Sanguineous apoplexy, or the effusion of blood, is more sudden than the serous, and occurs in plethoric habits. The serous occurs to old debilitated persons.

153. *Treatment.* Bloodletting, general and local; drastic purgatives; croton oil; cold applications to the head, and a blister to the nape of the neck.

PARALYSIS. PALSY.

154. *Symptoms.* Loss of motion in some part of the body, preceded either by apoplexy,

or by a diseased state, known by a tingling sensation, pain in the head, and loss of memory. Paralysis of one side of the body is called hemiplegia; that of the lower half is named paraplegia.

155. *Treatment.* At first, general and local bloodletting, proportionate to the individual; purgatives and blisters. This disease, likewise, arises occasionally from debility. Stimulants, both external and internal, may be had recourse to, as well as towards the latter stages of the inflammatory cases. Arnica and strychnine have been highly commended by some practitioners.

ORDER II.

ADYNAMIÆ. ADYNAMIC AFFECTIONS.

ANGINA PECTORIS, OR SYNCOPE ANGINOSA.

156. *Symptoms.* Sudden pain across the chest, and an apparently suffocating difficulty of breathing, recurring in paroxysms, particularly after exercise or eating. Pulse weak and irregular, countenance pale, cough, slight expectoration; sometimes difficulty in lying down. The patient is sometimes taken off during a paroxysm.

157. *Treatment.* Moderate bloodletting; antispasmodics, with opium: light food should

only be allowed, and mental agitation be guarded against. Issues, blisters, and the mineral tonics, are found serviceable.

DYSPEPSIA. INDIGESTION.

158. *Symptoms.* Want of appetite; nausea; depressed spirits; acrid eructations; heartburn; costiveness generally; small slow pulse; tongue white; disturbed sleep.

159. *Treatment.* Remove the exciting cause; give an emetic or purgative occasionally; tonics and bitters, such as gentian, quassia, cascarilla, &c. with alkalies to correct the acidity. Obviate the costiveness, and give alterative doses of mercury. The diet should be light, and gentle exercise should be taken.

HYPOCHONDRIASIS. LOWNESS OF SPIRITS.

160. *Symptoms.* Dyspepsia and headach; flatulence, with distension of the stomach; heat and pain in the hypochondria; great languor; depressed state of mind, and despondency; great attention is paid to the health, and alarm excited by any alteration in the symptoms. An obstinate belief in groundless fears is a characteristic of this complaint.

161. *Treatment.* Divert the patient's mind and attention, by condolence and inspiring hopes of success in his cure; treat the dyspeptic symptoms as in dyspepsia; give mild mineral

tonics and antispasmodics. The bowels should be kept open by gentle aperients.

CHLOROSIS. RETENTION OF THE MENSES.

162. *Symptoms.* Dyspepsia; pale countenance; listlessness, and disinclination for exercise or fatigue; palpitations, and sometimes syncope. Depraved appetite, and dislike to usual food; the legs become sometimes œdematous.

163. *Treatment.* A light nutritious diet; gentle exercise, particularly on horseback; bitter purgatives, particularly aloes; the preparations of iron are particularly efficacious, when combined with mild aperients; tonics may be given, such as cascarilla, chamomile, gentian, &c.; and, when there is a great languor, stimulants are admissible, such as camphor and ammonia; cold and warm bath, chalybeate waters, and electricity.

ORDER III.

SPASMI. SPASMODIC DISEASES.

TETANUS. RIGID SPASM.

164. *Symptoms.* Rigid spasm of the voluntary muscles of some portion of the body. It generally commences in the muscles of the neck. The spasmodic contraction of the muscles of the

jaw and throat is called *trismus*; that of the muscles of the back, in which the body is bent backwards, is called *opisthotonos*; that when the body is bent forwards, *emprosthotonos;* and when bent laterally, *pleurosthotonos.* Traumatic tetanus arises from wounds.

165. *Treatment.* Must vary according to the causes, and probable effect on the system. If it arise from wounds, and there is evident inflammatory diathesis, bleed largely from the arm; cold bath, and cold affusion; give purgatives and mercury to salivation, and prussic acid. Idiopathic tetanus requires powerful anti-spasmodics, such as opium, musk, camphor, and æther, warm bath, Peruvian bark, and wine, embrocations, and stimulant applications externally.

EPILEPSIA. EPILEPSY.

166. *Symptoms.* Sudden loss of sense and power; pupil fixed and immovable; respiration hurried, with an apparent sense of suffocation; convulsive fits, with spasmodic contraction of various muscles of the body, especially those of the face. They gradually diminish, but leave the person still insensible, and apparently comatose. The fit is generally preceded by a cold sensation, which creeps up the body, and is called *aura epileptica;* and oftentimes by pains in the head, and unusual distressing feelings.

167. *Treatment.* During the fit, prevent the

patient from hurting himself; if plethoric, bleed from the arm, jugular vein, or temporal artery; if debilitated, give stimulants and antispasmodics. During the interval, apply the treatment requisite for the plethoric or the debilitated condition of the system.

CHOREA. ST. VITUS'S DANCE.

168. This disease generally attacks females, and those only who have not arrived at puberty most commonly between the tenth and fourteenth year.

169. *Symptoms.* Convulsive motions, affecting, in general, the extremities of one side only. The muscles of the face, and, indeed, all the voluntary muscles, are sometimes affected. These motions are observed most in an attempt being made to walk, or grasp any thing.

170. *Treatment.* Cold bathing, tonics, such as sulphate of zinc, and purgatives. The subcarbonate of iron, in large doses, has been successful in many cases.

ASTHMA.

171. *Symptoms.* A periodical difficulty of breathing, generally coming on about evening, and diminishing in the morning. There is a sense of tightness and fullness at the chest, and a wheezing noise. At the commencement of the paroxysm, there is very little cough;

but, towards the end, the cough becomes free, and is frequently accompanied with expectoration of mucus. The face is much flushed, and of a livid tinge.

172. *Treatment*. Bloodletting in small quantities. During the paroxysm, nauseating expectorants, such as squills, tartarized antimony, ipecacuanha, and ammoniacum; narcotics, as opium, stramonium, and tobacco; purgatives, and the warm bath.

173. A modification of the same treatment should also be adopted in the intervals, so as to strengthen the constitution generally.

PERTUSSIS. WHOOPING COUGH.

174. *Symptoms*. A peculiar convulsive cough, attended with a sonorous inspiration, which has obtained the name of a whoop. The cough returns in paroxysms, and, after each, a quantity of mucus is brought off the lungs, or the contents of the stomach, by vomiting. If the fits are violent, great lassitude follows.

175. *Treatment*. General and local bloodletting; emetics; blisters; narcotics, in small doses; expectorants; stimulating embrocations to the chest and back; change of air.

COLICA. COLIC.

176. *Symptoms*. Violent pain in the abdomen, with a twisting sensation about the umbilicus

spasmodic contraction of portions of the abdominal muscles; costiveness, and vomiting; hiccup, and flatulent eructations.

177. *Treatment.* Common cathartics, or croton oil, if necessary; bloodletting; clysters; cold water dashed on the extremities; carminatives; antispasmodics, and warm bath.

CHOLERA MORBUS.

178. *Symptoms.* Vomiting and purging of bilious matter; griping pains of the abdomen; pulse frequent and small; great anxiety, and, in severe cases, spasmodic contraction of the extremities.

179. *Treatment.* Give diluents, as beef-tea, barley-water, and chicken-broth; opium in large doses; the warm bath, and fomentations; emollient clysters, and afterwards tonics.

DIARRHŒA. LOOSENESS.

180. *Symptoms.* Frequent discharge of liquid fæcal motions, with much pain and griping.

181. *Treatment.* Aperients are often useful; if not sufficient, give cretaceous mixture, with tincture of catechu and opium in small quantity. Tonics may be administered subsequently.

HYSTERIA. HYSTERICS.

182. *Symptoms.* A general symptom is a sensation of a ball rising in the throat, from the

abdomen and stomach; syncope; insensibility; breathing very quick; involuntary laughing or crying, and a variety of other symptoms.

183. *Treatment.* Bloodletting, if the patient be young and plethoric; stimulants to the nose and temples: give antispasmodics, purgatives, and tonics, after the attack.

CLASS III.

CACHEXIÆ. CACHECTIC DISEASES.

ORDER I.

MARCORES. EMACIATIONS.

PHTHISIS. PULMONARY CONSUMPTION.

184. *Symptoms.* Begins with a dry cough; breath short; languor and debility; pulse quick, but soft. These symptoms increase in intensity, and are followed by hectic fever, night sweats, emaciation, expectoration of purulent fluid, with pain. There is generally a flushed cheek.

185. *Treatment.* Bloodletting in small quantities; purgatives; diaphoretics, acids, blisters, and rubefacients. In its commencement, removal to a warm climate may retard the development of several symptoms; but when vomicæ have been once formed, there is little hope of recovery.

ORDER II.

INTUMESCENTIÆ.

ANASARCA. DROPSY OF THE FLESH.

186. *Symptoms.* A soft inelastic swelling of the whole body, or some part of it. If pressed upon, the impression of the finger remains for some time, producing the appearance called pitting.

ASCITES. DROPSY OF THE BELLY.

187. *Symptoms.* A tense, slightly elastic, and fluctuating swelling at the abdomen. As the disease advances, the urine becomes scanty and high coloured, dyspnœa, and, in general, anasarca of the lower extremities.

HYDROTHORAX. WATER IN THE CHEST.

188. *Symptoms.* Difficulty of breathing, particularly in the horizontal posture ; paleness of the face ; lividness of the lips ; scanty urine ; starting from sleep ; palpitation ; and anasarca of the legs and feet.

189. *Treatment.* The general treatment of dropsies is very similar. If they depend on an inflammatory state, general and local bleeding

must be resorted to; drastic and hydragogue purgatives; diaphoretics, and diuretics. If the dropsies depend on debility, give stimulants, such as wine, opium, &c.

HYDROCEPHALUS. WATER IN THE HEAD.

190. *Symptoms.* The acute form is known by fever, headach, restlessness, vomiting, pulse quick, and costiveness; subsequently strabismus, dilated pupil, convulsions, involuntary discharge of fæces, pulse depressed, and death follows.

191. *Treatment.* General and local blood-letting, drastic purgatives, blisters, digitalis, &c.

192. The chronic form is known by the drowsiness, strabismus, general debility, and immense size of the head.

193. *Treatment.* Blisters, diuretics, and purgatives. Mercury to salivation.

ICTERUS. JAUNDICE.

194. *Symptoms.* Yellowness of the skin; white fæces; languor and inactivity; high-coloured urine, tinging the linen of a yellow colour.

195. *Treatment.* Will depend on the cause; if from obstruction of the gall-ducts, emetics may be useful; if on inflammation, antiphlogistics in general must be administered.

CONCISE OBSERVATIONS ON MIDWIFERY.

1. The science of Midwifery, strictly speaking, applies solely to parturition, but is usually extended to the functions and diseases of the female sex, in reference to the reproduction of the human race, and to the management of infants, until the period that they become independent of the nourishment which they receive directly from the mother.

2. A knowledge of midwifery presupposes an acquaintance with the anatomy and functions of the various parts concerned in the process of parturition.

3. The *pelvis* is a kind of osseous canal, situated at the base of the vertebral column. The bones which form it are, the *sacrum coccyx*, and two *ossa innominata*. Each *os innominatum* is divided (in the fœtus, and for some time afterwards,) into pubis, ilium, and ischium.

4. These bones are connected together by strong ligaments, particularly at the *symphysis pubis* and at the sacro-iliac *synchondrosis*. The divisions of the pelvis are into the *cavity*, the *brim* or *upper aperture*, and the *outlet* or *lower aperture*.

5. The *axis* of the *brim* is in a line drawn from the umbilicus to the extremity of the sacrum; that of the *outlet*, in a line drawn from the promontory of the sacrum through the centre of the os externum.

6. The *diameter of the brim* of an average pelvis, taken from the symphysis pubis to the promontory of the sacrum, measures 4 inches; the transverse diameter measures 5 inches; and the oblique diameter, from the cotyloid cavity on one side to the sacro iliac synchondrosis on the other, measures 5⅛ inches.

7. The *diameters of the outlet* each measure 4 inches; but the antero-posterior may acquire an additional inch by the yielding of the coccyx, so that the long diameter of the brim and outlet are reversed. The distance from the symphysis pubis to the hollow of the sacrum is 5 inches.

Description of the uterus and its appendages, vide page 150, 151.

8. *Dimensions of the fœtal head.* The length from the chin to the occiput is about 5 inches; from the occiput to the forehead, about 4½ inches; from the prominence of one parietal bone to that of the other, 3½ inches; and from the vertex to the base of the cranium, 3 inches.

9. The head of the fœtus being larger than any other part, ensures to the rest an easy passage.

10. The bones of the head being imperfectly formed, leave spaces between them, called *fontanels*, which allow the bones to overlap each other, when compressed.

11. The *anterior fontanel,* of a quadrangular shape, is situated between the junction of the frontal and parietal bones; the *posterior* one, of a triangular form, is found between the central junction of the occipital and parietal bones.

12. The *period of utero-gestation* is generally limited to between the fifteenth and forty-fifth years of age, or as long as menstruation continues. This function commences much earlier, and terminates much later, in some constitutions and countries than in others. Its average duration is about thirty years.

13. When conception has taken place, the ovum is conveyed to the uterus by the Fallopian tubes, covered by the *chorion* and *amnios.* In the uterus, the ovum receives two additional coverings, which are the *decidua vera* and *decidua reflexa,* which latter disappears after about the fourth month.

14. The *amnios* contains the fluid called liquor amnii, which has several uses. It preserves the fœtus from pressure, assists in forming the wedge to the os uteri during labour, and lubricates the passages.

15. The *placenta* is a spongy mass, composed of cellular tissue and the ramifications of blood-vessels. It is divided into two portions, called fœtal and maternal, through which changes are effected in the fœtal blood. The placenta is generally attached to the fundus of the uterus.

16. In cases of twins, there are generally two

placentæ, or they may be attached to each other at their edges, with the vessels anastomosing between them.

17. The *funis umbilicalis* forms the communication between the placenta and fœtus. It is composed of the umbilical vein and two umbilical arteries, connected together by cellular tissue. The average length of the funis is about twenty inches.

18. An average fœtus, at the end of nine months, weighs about six pounds, and its length is about eighteen inches.

19. *Symptoms of conception and pregnancy.* There is, at first, sensation of chilliness, succeeded by febrile excitement; loss of appetite, with nausea and vomiting, particularly occurring on rising in the morning; amenorrhœa; plethora. After some time, the breasts swell, and become painful, and the areola is darkened and enlarged. Quickening occurs about the fourth month, and, in consequence of relieving the iliac arteries from pressure, is often attended by syncope; motion of the fœtus very perceptible; gradual increase in the size of the abdomen.

20. *Labour* is that natural function of the body by which, at the expiration of forty weeks, or about two hundred and seventy-five days, the uterus forcibly expels and contracts upon its contents, returning, in a short time, nearly to the same state as before impregnation.

21. The *diseases* or *disorders* occasioned by

the pregnant state are *nausea* and *vomiting; cardialgia; pain in the head; hæmorrhoids; costiveness; irritability of the bladder*, producing incontinence of urine; *œdema of the labia;* and a *varicose state* of the veins of the lower extremities.

22. The earliest period at which a child can live out of the uterus is the end of the sixth month. Labour occurring before the full period is called premature; and, if it take place before the seventh month, it is considered as abortion.

23. The causes or means by which labour is accomplished are the contractions of the uterus, assisted by the abdominal muscles.

24. The *precursory symptoms* of labour are, generally, a partial subsidence of the abdominal tumour; a glairy mucous secretion, denominated shew; and a frequent desire to evacuate the bladder and rectum.

25. The *duration of labour* is subject to great variation, lasting from a few hours to several days. First labours are generally the most tedious and painful, in consequence of the distension of the parts unaccustomed to it.

26. The *first stage* of labour is accompanied by arterial excitement, particularly during the pains, restlessness and cries, nausea, and vomiting; in addition to which, are the following symptoms, which afford the diagnostic character.

27. i. Pains accompanying each contraction, resembling cramp of the stomach or intestines.

They commence generally at the fundus of the uterus, and pass on towards the pelvis, lasting two or three minutes, and recurring after intervals of about ten minutes, sometimes much oftener; they increase in strength and rapidity as the labour advances. The uterus, at the same time, may be felt hard and contracted, by the hand placed upon the abdomen. The os uteri is dilated, and the membranes may be felt very tense during the contractions.

28. ii. A discharge of mucus tinged with blood.

29. iii. Dilatation of the os uteri.

30. iv. Protrusion of the membranes, of an ovoid shape, from the os uteri, serving as a wedge to assist in the dilatation.

31. In the *second stage* of labour, after some time, the membranes burst with the expulsive efforts of the uterus, the liquor amnii escapes, and the uterus contracts, with greater force, upon the fœtus. The os uteri gradually dilates still more, and the child's head becomes engaged in the pelvis. After some time, the external parts relax and dilate, so as to allow the expulsion of the fœtus through the os externum.

32. The *third stage* is occupied by the expulsion of the placenta, which generally takes place in about half an hour. From the vagina it may be removed without any difficulty.

33. The position of the different parts of the fœtus in the uterus is generally the same, and such as to occupy the least possible space.

The head inclines, and rests upon the thorax; the trunk is bent forwards; the arms lie down by the sides, with the forearms often crossed upon the sternum; the thighs are raised towards the abdomen, with the legs bent upon the thighs, and sometimes crossed, so that the heel is opposed to the buttock of the opposite side, and the feet are towards the front of the legs.

34. The parts of the fœtus which may present are numerous; but, for practical purposes, may be divided into four classes, which include *presentations* of the *vertex*, *face*, *pelvis* or *lower extremities*, *body* or either *shoulder*.

35. *Vertex presentations* are the most favorable, and such as occur in natural labour.

36. Labours are classified in different ways by different authors; the most simple division is into *natural* and *preternatural*.

37. In the first are included labours in which the vertex presents: the pelvis is of adequate dimensions, manual interference is not requisite, and the process is completed in twenty-four hours. In the second division we include protracted labours; labours with presentation of some part of the body, with twins, hæmorrhage, or convulsions.

38. *Natural labour.* Mechanical process: first, the chin rests upon the breast; the head passes through the brim, with the occiput directed towards the acetabulum; then a turn, equal to the fourth of a circle, is produced by the inclined plane of the pelvis; the occipital

protuberance is carried behind the symphysis of the pubis, and the face towards the concavity of the sacrum.

The head then arrives at the outlet, and passes through it; the occiput emerges first, and then the face, sweeping along the concavity of the sacrum. The shoulders in the brim make a turn; the one which was behind passes first through the outlet. The same applies to the nates.

39. If the occiput rests on either sacro-iliac synchondrosis, the face arrives behind the symphysis pubis, and the occiput rests against the concavity of the sacrum. The occiput emerges first, and the face afterwards.

40. In natural labour, little interference is required on the part of the accoucheur. He may assist the uterine contractions by gentle pressure upon the abdomen during the pains; and, when the perineum is put upon the stretch, the left hand may be applied in such a manner as to give it support.

41. When the fœtus is expelled, a ligature composed of thin tape, or of seven or eight pieces of thread, is to be tied tight around the umbilical cord, at the distance of two inches from the umbilicus; a second is to be applied in a similar manner, at two inches from the first, and then the cord is to be divided between them. The cord should then be examined, to ascertain whether any blood escapes; if so, a tighter ligature should be applied.

42. Attention should then be turned to the placenta, which in common cases comes away very readily.

43. After it is expelled, place one hand upon the abdomen to ascertain whether the uterus be properly contracted, to guard against the occurrence of hæmorrhage.

44. If the placenta be not expelled after waiting an hour, assistance will be required to extract it, which will depend upon the causes of retention.

45. The placenta may be retained in the uterus from loss or want of power of contraction; by irregular contraction, by means of which it is forcibly retained; and by adhesion to the lining coats of the uterus.

46. The management, in the first case, consists in using pressure over the abdomen by a bandage, compression of the uterus externally by the hand, and dashing cold water upon the abdomen. If these means are not adequate, the hand is to be introduced into the uterus, and gently moved about in it, until contraction comes on, and the placenta is expelled. A new method of removing it has lately been proposed by an Italian physician, which might be very proper in these cases: it consists in injecting the placenta with cold water through the umbilical cord.

47. When the placenta is retained by spasmodic contraction, the usual treatment is to give a dose of forty or fifty minims of Tr. opii;

after a short time the contraction relaxes, and the hand may be gently passed up to assist the relaxation.

48. The adhesion of the placenta to the uterus depends on inflammatory action, with the deposit of coagulable lymph.

49. When it is found to exist by the retention of the placenta, retraction of the umbilical cord, and hæmorrhage, the hand must be introduced into the uterus, and two fingers gently passed between the placenta and uterus to separate the adhesions, and great care should be taken to bring away every portion of it.

50. *Protracted labours* are synonymous with lingering, difficult, and instrumental. They depend on either an insufficient power in the uterus, or undue resistance in other parts, and may be subdivided into cases which terminate by the uterine efforts, and those which demand the use of instruments.

51. *Lingering or protracted labours* depend on, 1st, *atony or feeble action of the uterus,* brought on by low diet and other debilitating causes.

52. The treatment will consist in administering mild nutritious diet, friction over the abdomen, or moderate doses of opium : these are the cases which require the ergot of rye to be given in doses of gr. x. to gr. xv. of the powder, or an ounce and a half of a decoction made with half a drachm to eight ounces of water, given every ten minutes.

53. 2nd. *Plethora* sometimes diminishes the proper contractions of the uterus, and requires the detraction of blood from the arm.

54. 3rd. *An excess of liquor amnii* diminishes the contractile power of the uterus by the distension which it occasions. The remedy consists in puncturing the membranes, either by a probe or quill, or scratching an opening through them with the finger-nail. This should not be done till the os uteri is well dilated.

55. 4th. *Rigidity of the os and cervix uteri* requires generally abstraction of blood from the arm, and purgatives. The French recommend rubbing extract of belladonna over the os uteri, which is said to be very useful in producing dilatation.

56. 5th. *Rigidity of the external parts* requires fomentations and the application of lard in the vagina. The perineum is to be particularly guarded in these cases.

57. 6th. *Distension of the bladder* requires the introduction of the catheter to draw off the urine.

58. 7th. *Shortening of the funis.* In this case, patience is the only remedy, but care must be taken that the funis is not ruptured or torn from its insertion in the umbilicus. There are numerous other causes of lingering labour detailed by authors; and, amongst them, tumors of different kinds. The ingenuity of the accoucheur must supply the place of rules of treat-

ment, which cannot be laid down for every possible case.

59. *Labours which require instruments.* If the uterus, after long continued efforts, loses its power, and is incapable of expelling the fœtus; or, when the fœtal head is impacted in the pelvis, and the natural powers are inadequate, recourse must be had to instrumental assistance. In using instruments compatible with the life of the child, there are a few general rules to be attended to:

60. Let the bladder and rectum be evacuated, the first by the catheter, the second by an enema, if required.

61. The os uteri must be dilated, and the external parts must be in a yielding state.

62. Introduce the instruments during the cessation of pain.

63. Use the instruments in such a way as to assist the natural efforts; that is, during the contraction of the uterus; if the powers of the uterus are lost, imitate nature in allowing short intervals of repose.

64. Employ the extracting power according to the axis of the various parts.

65. If pain is produced by the instruments, remove them, and replace them with greater caution.

66. *Directions for applying the forceps.* Place the patient at the edge of the bed on her left side; take the half of the forceps with the fixed

handle in the left hand, introduce the blade over the upper part of the child's head, guiding it with the index finger of the right hand; then take the other blade in the right hand, and introduce it opposite to the first, and lock them together: when this is done, gentle traction may be used from one blade to the other, keeping in mind the different bearings of the parts to be passed.

67. The *application of the forceps* is required in those protracted cases in which uterine action has ceased, or nearly so, in those cases in which there is want of room, hæmorrhage, or convulsions, and in which it is requisite to expedite delivery. In all cases when the head is in the pelvis, the forceps should be applied in the direction from the occiput to the chin, or vice versâ; and, in each case, it is necessary to feel an ear.

68. *Face presentations* are very unfavorable and tedious, and require particular management. If the chin is opposed to the pubes, and discovered early, the position may be rectified by depressing the occiput, and elevating the face with the fingers.

69. *Presentations of the forehead and ear* may generally be much assisted by mild application of the lever, used so as to depress the occiput and elevate the chin or ear.

70. The long forceps are requisite in those cases in which there is slight diminution of the

natural size of the brim of the pelvis; to cases of hæmorrhage or convulsions, when the child's head rests on the brim.

71. They must be applied in such cases over the occiput and face, and traction be used from side to side, remembering also the axis of the parts.

72. The *operation of embryotomy* is requisite in those cases in which the pelvis is deformed or distorted, in case of ossification of the bones of the cranium of the fœtus, or distension of the head by fluid. The Cæsarian section has been resolved upon in some such cases; and, in many, premature labour has been induced with success.

73. The distance between the pubis and sacrum must not be more than two inches and a half.

74. The *instruments* are the *perforator*, to make an opening in the head, and the *crotchet*, which is a sharp-pointed hook, or, in place of it, preference is now given to the craniotomy forceps.

75. In performing this operation, the uterus must be fixed by pressure upon the abdomen; the operator then passes up two fingers in the vagina up to the head, guiding the perforator, which is introduced in one of the fontanels; the opening is then to be enlarged by a rotatory motion of the instrument.

The craniotomy forceps are then to be introduced, in order to grasp the bones of the head; and traction is to be used according to the axis of the parts to be passed.

If the head requires opening in face presentations, the perforator must be introduced just above the nose; and, if it is requisite after expulsion of the extremities, it must be passed in just above the ear.

76. *Symptoms of death of the fœtus in utero.* Immobility of the fœtus; sensation of weight; uterus relaxed and yielding; complexion sallow or pale; loss of appetite; uneasiness; diarrhœa; fever; and diminution in size of the breasts and abdomen.

77. *The Cæsarian section* is considered necessary, if, at the full period of utero-gestation, the distance from the symphysis pubis to the promontory of the sacrum be less than one inch and three quarters, and the largest diameter of the pelvis is less than two inches and a half.

It is also supposed that the fœtus is of full growth.

78. Place the patient on her back, cut down on the linea alba with a scalpel about the length of four inches, then divide the peritoneum with a blunt-pointed bistoury; cut through the uterus to the same extent and in the same direction; extract the fœtus and placenta through the opening, and apply a bandage gently around the abdomen. The section of the abdomen is likewise necessary if the uterus becomes rup-

tured, and the contents are poured into the abdomen, whilst the os and cervix uteri are not well dilated.

79. It has been recommended to bring on labour prematurely, if it is ascertained to be impossible for a child to be expelled alive at the full time. The operation consists in puncturing the membranes, or by introducing a finger to detach the decidua as far as possible from around the cervix uteri. Parturition comes on in a short time afterwards, and is to be managed according to the presentation, as in other cases.

80. The *feet* usually present in two positions, viz. with the toes towards one of the sacro-iliac symphyses; if they present towards the sacrum, or symphysis pubis, a turn must be made by grasping the nates, to give the inclination requisite for the head to pass through the brim. If the arms can be easily reached, they should be brought down before the head, and the finger may also be passed up to depress the chin, which will diminish the length of the axis of the head.

81. If one foot presents, endeavour to bring down the other, by placing a finger in the groin.

82. The *knees* presenting require the same management.

83. *Presentations* of the *breech* are generally known by an escape of meconium, by the external organs of generation and the anus.

84. These presentations require usually little

manual assistance until the feet are brought down, and then they may be managed as in footling cases.

85. There are other presentations, such as of the *upper extremities*, *back*, *abdomen*, *nape of the neck*, and *throat*, which require the introduction of the hand into the uterus to find the feet or knees, and bring them down by the operation called *turning*.

86. Vertex presentations, under particular circumstances, require to be managed in the same manner.

87. *Turning* is also requisite in *convulsions*, *dangerous hæmorrhage*, and *torpor of the uterus*. Cases which require turning are thus performed: the patient may be placed as usual on her left side, the bladder and rectum must be evacuated, and the os uteri well dilated; then, during an interval of pain, introduce one hand into the uterus, pass it carefully along the inside of the membranes, pass the fingers over the body of the fœtus, and take hold of the feet, which are generally towards the abdomen, grasp them, and bring them out of the external parts. Alter the position by giving the body a slight turn, from outwards inwards; disengage the arms, first the one behind; depress the shoulder, and pass the finger over the head and chin; give to the head its motion of flexion; place the fingers of one hand on the occiput, which recedes, and the fingers of the other hand on the face, to lower the head; repeat the turn, place the fingers of one

hand near the mastoid process, those of the other on the sides of the chin; support the perineum, and allow the face to emerge first.

88. If the *funis* presents, the object will be always to return it to the uterus, and to keep it there in any possible manner. A sponge has been sometimes used for that purpose; but this, as well as the other means recommended, are generally inadequate. If it cannot be returned, let it be placed in such a part of the pelvis as to make it least subject to pressure. Turning is sometimes resorted to in these cases, to save the life of the child, at the earnest request of the mother.

89. *Twin cases. Management.* In cases of plurality of children, the principal object is to prevent hæmorrhage, which may arise from atony of the uterus, produced by excessive distension. When it is ascertained, after the birth of the first child, by examination per vaginam, and by placing the hand upon the abdomen, that there is another fœtus in utero, and uterine action does not come on, it is requisite to wait a short time, as the hand may then be passed up to ascertain the presentation, and to rupture the membranes; if turning be requisite, it should be done immediately, and then it is proper to wait till contraction comes on. In extracting the placentæ, they should be brought away together by coiling the two cords about each other. Subsequently, a bandage should be carefully ap-

plied round the abdomen, and great care taken to prevent the occurrence of hæmorrhage.

90. The symptoms of *convulsions* during labour are, pain in the head, vertigo, and loss of consciousness. Oppression at the epigastrium, turgidity of the vascular system, especially about the head and neck; hurried respiration, attended with a tremulous hissing noise; rigidity of the voluntary muscles during the paroxysm.

91. Convulsions occur more frequently in first labours, and generally depend upon plethora in an irritable habit, irritation of the os and cervix uteri, and indigestion.

92. *Treatment.* Relieve the plethora by bloodletting from the arm, temporal artery, or jugular vein; apply leeches to the neck or epigastrium; shave the head, and apply cold to it; give nauseants, such as tartar emetic; apply sinapisms to the feet or legs, and dash cold water suddenly over the body.

93. Relieve the uterus as soon as possible. When dilatation of the os uteri ensues, expedite delivery, but by the mildest possible means.

94. *Hæmorrhage* occurs before, during, or after, labour. When it occurs before, the treatment adopted is that for abortion, keeping the patient in the recumbent position, abstaining from heating food or drinks, and administering cold acidulated drinks.

95. *Hæmorrhage* coming on during labour is

either accidental or necessary, the first occasioned by a slight detachment of the placenta at some part of the fundus or corpus uteri, the second depending on its being placed upon the os and cervix uteri. In the first case, if the hæmorrhage is considerable, labour must be hastened by rupturing the membranes and turning; but, if it be slight, it will be better to wait and assist the uterine efforts.

96. In unavoidable hæmorrhage, the placenta is attached about the os uteri, which, being dilated, detaches a portion, and thus produces the hæmorrhage.

97. If the placenta be attached rather on one side, the hand must be passed up by the space unoccupied, to grasp the feet and turn the child; but, if it is directly over the os uteri, the fingers and hand must be passed through its substance, in order to accomplish the object of turning. The rest of the treatment may easily be inferred.

98. Hæmorrhage after labour depends generally upon torpor of the uterus, depending on a variety of causes.

99. The general treatment consists in stimulating the uterus externally, by friction, or by passing up the hand internally, or in the application of cold.

100. Hæmorrhage takes place sometimes internally into the uterus, forming large coagula, which assist in stopping the mouths of the bleeding vessels.

101. The general treatment of all hæmorrhages is the same. Remove the exciting cause, place the patient in the recumbent posture, with the feet rather raised above the rest of the body; ventilate the room with cool air; administer cold, iced, or acid drinks; apply cold wet napkins to the pubes and abdomen, and enjoin the greatest quietude. Introduce some cold body into the vagina, such as a piece of ice, to hasten the formation of coagula, and apply a bandage gently round the abdomen.

102. In some cases, hæmorrhage takes place to such an extent, as to leave the system incompetent to rally under any common modes of treatment. Transfusion has been recommended under such circumstances, as affording the only hope of recovery.

103. The operation consists in injecting fresh-drawn human blood into one of the veins of the patient, generally the cephalic or basilic, to the extent of twelve or sixteen ounces. It must be done gradually, or it will bring on fatal consequences.—*Vide* WALLER's ***Elements of Midwifery.***

104. Inflammation of the uterus and peritoneum sometimes comes on after labour, and is commonly called puerperal fever.

105. *Symptoms.* Rigors; cessation of the lochia; diminution of the secretions in the breasts, kidneys, and bowels; great pain in the hypogastric region, increased upon pressure; quick pulse, vomiting, headach, and thirst. As

the disease progresses, the pain is more acute; there is hurried respiration, cold sweats, the pulse intermits, and death soon follows.

106. *Treatment.* Abstract blood from a large orifice to a considerable extent; apply leeches to the hypogastrium; and, subsequently, a blister; administer purgatives and enemas, principally calomel and opium; give tartarized antimony and digitalis; enjoin great quietude, and a low temperature, with abstinence from nourishing and stimulating food.

107. Spirit of turpentine, in doses of ʒ ss. to ℥j. is said to have been given by some practitioners in this disease, and considered by them to be a specific. The cases in which it has succeeded are considered, however, by the majority, not to be those of genuine uterine inflammation or peritonitis.

108. Infants are sometimes born in a state of *asphyxia,* brought on by the continued pressure, or by a quantity of mucus filling up the mouth and fauces.

109. *Treatment.* Before tying and dividing the cord, immerse the child in warm water, or apply a hot wet flannel to the chest; use friction over the heart; inflate the lungs by blowing into the mouth, closing the nostrils, and pressing the larynx against the œsophagus at the same time.

TABLE OF ATOMIC WEIGHTS,

OR

PROPORTIONAL NUMBERS,

HYDROGEN BEING 1.

		Ato Weig
Acid, acetic		
crystallized, (1 portion water)		
arsenic		
arsenious		
benzoic		1
boracic		
crystallized, (2 prop. water)		
carbonic	1 carbon 6 2 oxygen 16	
chloric	1 chlorine 36 5 oxygen 40	
chloriodic	2 chlorine 72 2 iodine 124	1
chlorocarbonic	1 carb. oxide (gas) 14 1 chlorine 36	
chlorocyanic		
chromic	1 chromium 32 2½ oxygen 20	
citric, dry		
crystallized (2 water, 18)		

Acid, columbic			152
ferrocyanic			108
fluoric			10
fluoboric			34
formic			37
fluosilic			26
gallic			62
hydriodic			125
hydrochloric (muriatic)			37
hydrocyanic	1 cyanogen 1 hydrogen	26 1	27
hydrofluoric			19
hyponitrous	1 nitrogen 3 oxygen	14 24	38
hypophosphorous	2 phosphorous 1 oxygen	24 8	3
hyposulphurous	2 sulphur 1 oxygen	32 8	40
hyposulphuric	2 sulphur 5 oxygen	32 40	72
iodic	1 iodine 5 oxygen	124 40	164
malic			60?
manganesous	1 manganese 3 oxygen	28 24	52
manganesic	1 manganese 4 oxygen	28 32	60
molybdic			72
molybdous			64
muriatic			37
nitric, dry	1 nitrogen 5 oxygen	14 40	54
liquid, spec. gr. 1·5, (2 prop. water)			72

Acid, nitrous	1 nitrogen 4 oxygen	14 32	46
oxalic, dry			36
cryst. (4 prop. water)			72
perchloric	1 chlorine 7 oxygen	36 56	92
phosphoric	1 phosphorus 2 oxygen	12 16	28
phosphorous	1 phosphorous 1 oxygen	12 8	20
purpuric			44
pyro-uric			251
saccholactic			105
selenic	1 selenium 2 oxygen	40 16	56
succinic			50
sulphuric, dry	1 sulphur 3 oxygen	16 24	40
sp. grav. 1·85 (1 prop. water)			49
sulphurous	1 sulphur 2 oxygen	16 16	32
sulphocyanic			57
tartaric, dry			66
crystallized, (1 prop. water)			75
tungstic			150
uric			72
crystallized, (2 water)			90
Alcohol	1 olefiant gas 1 aqueous vapour	14 9	23
Alum, dry			262
crystallized, (25 water)			487
Alumina, (27 Phillips)			18
sulphate			58

ALUMINUM (18 Phillips)		10
AMMONIA		17
acetate		67
bicarbonate	1 ammonia 17 2 carbonic acid 44	61
——— hydrated crystallized, (2 water)		79
carbonate	1 ammonia 17 1 carbonic acid 22	39
hydrated sesquicarbonate		118
chlorate, dry		93
citrate, ditto		75
fluoborate, ditto		51
hydriodate		142
iodate		181
muriate	1 ammonia 17 1 muriatic acid 37	54
nitrate, dry		71
crystallized, (1 water)		80
oxalate, dry		53
crystallized, (2 water)		71
phosphate, dry		45
crystallized, (2 water)		63
phosphite, dry		37
succinate, ditto		67
sulphate, ditto		57
crystallized, (2 water)		75
sulphite, dry		49
tartrate, dry		83
ANTIMONY, (Brande 45)		44
chloride		80
deutoxide	1 antimony 44 1½ oxygen 12	56

ANTIMONY, hydrosulphuret			69
iodide			168
peroxide	1 antimony 2 oxygen	44 16	60
protoxide	1 antimony 1 oxygen	44 8	52
sulphuret	1 antimony 1 sulphur	44 16	60
tartarized, (Thomson, 2 water)			354
(Phillips, 3 water)			363
ARSENITE OF POTASSA, dry			110
SODA, dry			94
ARSENIC			38
chloride of			74
iodide			162
sulphuret			54
sesqui-sulphuret			62
AZOTE			14
BARIUM			70
chloride of,	1 barium 4 chlorine	70 36	106
iodide			194
peroxide	1 barium 2 oxygen	70 16	86
protoxide	1 barium 1 oxygen	70 8	78
sulphuret			86
BARYTA, dry	1 barium 1 oxygen	70 8	78
crystallized, (20 water)			258
acetate, dry			128
crystallized, (3 water)			155
arseniate, dry			140

BARYTA, arsenite, dry		132
binhyposulphite		126
biphosphate, dry		124
carbonate, dry		100
chlorate, dry		154
chromate, dry		130
hydrate, crystallized, (20 water)		258
hydriodate, dry		203
iodate, dry		242
nitrate, crystallized, (no water)		132
oxalate, dry		114
ferro cyanate		145
muriate, crystallized, (1 water)		124
phosphate, dry		106
phosphite, dry		98
crystallized, (1 water)		107
sulphate, dry		118
sulphite, dry		110
tartrate, dry		144
tungstate, dry		198
BISMUTH		72
chloride	1 bismuth 72 1 chlorine 36	108
iodate	1 iodic acid 164 1 oxide of bismuth 80	244
nitrate, dry		134
crystallized, (3 water)		161
oxalate, dry		116
oxide		80
subsulphate	3 oxide of bismuth 240 1 acid, sulphuric, 40	280
sulphate, dry		88

Bismuth, sulphuret		88
Borax		80
crystallized, (8 water)		152
Boron		8
Cadmium		56
chloride		92
iodide		180
nitrate, dry		118
oxide		64
phosphate, dry		92
phosphuret		68
sulphate, dry		104
sulphuret	1 cadmium 56 1 sulphur 16	72
Calcium		20
chloride		56
iodide		144
fluoride, (fluor spar)		38
oxide, (lime)		28
phosphuret		32
sulphuret		36
Calomel, see Mercury, protochloride.		
Carbon		6
bisulphuret	1 carbon 6 2 sulphur 32	38
hydriodide		138
hydrochloride		43
oxide gas	1 carbon 6 1 oxygen 8	14
perchloride	2 carbon 12 3 chlorine 108	120
protochloride	1 carbon 6 1 chlorine 36	42

Carbon, subchloride	2 carbon 1 chlorine	12 36	48
Carburetted hydrogen, light	1 carbon 2 hydrogen	6 2	8
olefiant gas	2 carbon 2 hydrogen	12 2	14
Cerium, (Thomson)			50
protoxide			58
peroxide			62
Chlorine			36
protoxide	1 chlorine 1 oxygen	36 8	44
peroxide	1 chlorine 4 oxygen	36 32	68
Chromium			32
protoxide	1 chromium 1 oxygen	32 8	40
chromic acid	1 chromium 2½ oxygen	32 20	52
Cobalt, (Thomson)			26
arseniate, dry			96
chloride			62
iodide			150
nitrate, dry			88
oxalate, dry			70
peroxide	1 cobalt 1½ oxygen	26 12	38
phosphate, dry			74
protoxide	1 cobalt 1 oxygen	26 8	34
sulphate, dry			74
crystallized, (7 water)			137
sulphuret			42

CHLORIDE OF NITROGEN	4 chlorine 1 nitrogen	144 14
COLUMBIUM		
COPPER, (32 Thomson)		
acetate	1 acid 1 peroxide	50 80
crystallized, (3 water)		
biphosphate, (2 water)		
bisulphate		
crystallized, (10 water) blue vitriol		
bisulphuret	1 copper 2 sulphur	64 32
binitrate	1 peroxide 2 acid	80 108
iodide		
perchloride	1 copper 2 chlorine	64 72
protochloride	1 copper 1 chlorine	64 36
protoxide	1 copper 1 oxygen	64 8
peroxide	1 copper 2 oxygen	64 16
subnitrate, dry	4 peroxide 1 acid	320 54
subacetate	2 peroxide 1 acid	160 50
subsulphate	1 peroxide 1 acid	160 40
CORROSIVE SUBLIMATE		
CYANOGEN	1 nitrogen 2 carbon	14 12
CYANURET OF SULPHUR		

ETHER, sulphuric	2 olefiant gas 1 aqueous vapour	28 9	37
muriatic			44
chloric			43
FLUORINE, (18, 86, Berzelius)			18 (Thom.)
GLUCINA			26
GLUCINIUM			18
GOLD			200
chloride			236
iodide			324
protoxide	1 gold 1 oxygen	200 8	208
peroxide	1 gold 3 oxygen	200 24	224
perchloride			272
sulphuret	1 gold 3 sulphur	200 48	248
GUM, (Ure 68)			90
HYDROGEN			1
IODINE			124
IRIDIUM, (Thomson)			30
chloride			66
oxide			38
peroxide			46
IRON			28
protochloride	1 iron 1 chlorine	28 36	64
perchloride	1 iron 1½ chlorine	28 54	82
iodide			152
protoxide	1 iron 1 oxygen	28 8	36

IRON, peroxide	1 iron 1½ oxygen	28 12
persulphate	1 peroxide 1½ acid	40 60
persulphuret	1 iron 2 sulphur	28 32
protosulphuret	1 iron 1 sulphur	28 16
subsulphate	4 peroxide 1 acid	160 40
protosulphate, dry	1 protoxide 1 acid	36 40
crystallized, (7 water)		
LEAD		
acetate, dry		
crystallized, (3 water)		
arseniate, dry		
carbonate, dry		
chloride		
chromate, dry	1 protoxide 1 chromic acid	112 52
bichromate	1 protoxide 2 chromic acid	112 104
subchromate	2 protoxide 1 chromic acid	224 52
deutoxide	1 lead 1½ oxygen	104 12
gallate		
malate, dry		
molybdate, dry		
nitrate, crystallized (no water)		
nitrite		
oxalate, dry		

Lead, peroxide	1 lead 2 oxygen	104 16	120
phosphate, dry			140
phosphite			132
protoxide	1 lead 1 oxygen	104 8	112
subnitrate			278
sub-trit-acetate	3 protoxide 1 acetic acid	335 50	386
sulphate, dry			152
sulphite, dry			144
sulphuret			120
tartrate, dry			178
Lime	1 calcium 1 oxygen	20 8	28
acetate, dry			78
arseniate			90
binhyposulphite, (6 water)			130
biphosphate, dry			84
carbonate, dry			50
chlorate, dry			104
chloride	1 lime 1 chlorine	28 36	64
citrate, dry			86
chromate, dry			80
hydrate	1 aqueous vapour 1 lime	9 28	37
hydroguretted sulphuret	1 lime 2 sulphur 1 hydrogen	28 32 1	61
iodate			193
muriate			65
crystallized, (5 water)			110

Lime, oxalate, dry			6
phosphate, do.			5
phosphite, do.			48
subchloride	2 lime 1 chlorine	56 36	92
6 water			146
sulphate, dry			68
crystallized, (2 water)			86
tartrate			94
(4 water)			130
tungstate			178
Lithia			18
carbonate			40
nitrate, dry			72
phosphate			46
sulphate, dry			58
Lithium			10
chloride			46
iodide			134
sulphuret			26
Magnesia	1 magnesium 1 oxygen	12 8	20
ammonia-phosphate			93
crystallized, (5 water)			138
carbonate, dry	1 magnesia 1 carbonic acid	20 22	42
crystallized, (3 water)			69
common			182
chloride, dry			56
hydrate	1 magnesia 1 water	20 9	29
muriate			57

MAGNESIA, nitrate, dry		74
phosphate, dry		48
sulphate, do.		60
crystallized, (7 water)		123
tartrate		87
MAGNESIUM		12
chloride		48
sulphuret		28
MANGANESE		28
carbonate	1 protoxide 36 1 carbonic acid 22	58
chloride	1 manganese 28 1 chloride 36	64
deutoxide, brown	1 manganese 28 1½ oxygen 12	40
oxalate, dry		72
phosphate, do.		64
protoxide, (green)	1 manganese 28 1 oxygen 8	36
tritoxide	1 manganese 28 2 oxygen 16	44
sulphate	1 protoxide 36 1 sulphuric acid 40	76
crystallized, (5 water)		121
MERCURY		200
bichloride, (corrosive sublimate)		272
bicyanide		252
bipernitrate	1 peroxide 216 2 nitric acid 108	324
bipersulphate, dry		296
bisulphuret, (cinnabar)		232
iodide		324

POTASSA, arsenite, (dry 148)			102
bicarbonate	1 potassa 2 carbonic acid	48 44	92
crystallized, (1 water)			101
binarseniate, dry			172
bichromate, dry			152
binoxalate	1 potash 2 oxalic acid	48 72	120
biphosphate			104
bisulphate			128
crystallized, (2 water)			146
bitartrate			180
crystallized, (1 water)			189
carbonate	1 potash 1 carbonic acid	48 22	70
chlorate, dry			124
chromate, do.			100
citrate, do.			106
hydrate, solid, (1 water)			57
hydriodate, dry			174
iodate, dry			213
molybdate, dry			120
muriate			85
nitrate, (no water)			102
oxalate	1 potash 1 oxalic acid	48 36	84
perchlorate, dry			140
phosphate, do.			76
quadroxalate	1 potash 4 oxalic acid	48 144	192
subcarbonate. See carbonate.			

Potassa, succinate, dry		98
sulphite		80
sulphate		88
tartrate		114
tungstate		198
Potassium		40
chloride		76
iodide		164
peroxide	1 potassium 40 3 oxygen 24	64
phosphuret	1 phosphorus 12 1 potassium 40	52
protoxide, dry	1 potassium 40 1 oxygen 8	48
subphosphuret	2 potassium 80 1 phosphorus 12	92
sulphuret		56
Rhodium		44
protoxide		52
peroxide		60
Selenium		40
Selenuretted hydrogen		41
Silica		16
Silicium, or silicon		8
Silver		110
chlorate, dry		186
chloride, do.		146
iodate, do.		283
iodide, do.		234
nitrate, do.		172
oxalate, do.		154

SILVER, oxide	1 silver 1 oxygen	110 8	118
suboxide	3 silver 2 oxygen	330 16	346
phosphate, dry			146
phosphuret			122
sulphate, dry			158
sulphuret			126
SODA	1 sodium 1 oxygen	24 8	32
acetate, dry			82
crystallized, (6 water)			136
arseniate, dry			94
bicarbonate, do.			76
(crystallized, 2 water)			94
carbonate, (subcarb.) dry			54
(crystallized, 10 water)			144
sesquicarbonate (2 water)			84
chlorate, dry			108
chromate			84
hydrate			41
hydriodate, dry			158
iodate, do.			197
nitrate, do.			86
oxalate, do.			68
sulphate			72
crystallized, (10 water)			162
sulphite, dry			64
tartrate			98
tartarized			212
SODIUM			24

Sodium chloride		60
iodide		148
peroxide	1 sodium 24 1½ oxygen 12	36
protoxide	1 sodium 24 1 oxygen 8	32
sulphuret		60
Starch		142
Strontia		52
carbonate, dry		74
hydrate, 1 water		61
muriate		89
crystallized, (8 water)		161
nitrate, dry		106
phosphate, do.		80
oxalate, do.		88
sulphate, do.		92
Strontium		44
chloride		80
iodate		168
oxide		52
phosphuret		56
sulphuret		60
Strychnia		380
Sugar		15 (Prout)
Sulphur		16
chloride	1 sulphur 16 1 chlorine 36	52
iodide		140
phosphuret		28

Sulphuretted hydrogen			17
carbon. See carbon.			
Tannin			71
Tellurium			32
chloride			68
oxide			40
Tin			58
bisulphuret			90
peroxide	1 tin 2 oxygen	58 16	74
protoxide	1 tin 1 oxygen	58 8	66
perchloride	1 tin 2 chlorine	58 72	130
protochloride	1 tin 1 chlorine	58 36	94
sulphuret			74
Titanium (Thomson)			32
protoxide			40
titanic acid			48
Tungsten			126?
bisulphuret			158
oxide	1 tungsten 2 oxygen	126 16	142
Uranium			208
oxide			216
peroxide			224
Water			9
Yttria			42
Yttrium			34
Zinc			34

Zinc, carbonate	64
chloride	70
hydriodate, dry	162
iodide	159
iodate, dry	207
nitrate, dry	96
oxalate, dry	78
oxide	42
phosphate, dry	70
phosphuret	46
sulphate, dry	82
crystallized, (7 water)	145
sulphite, dry	74
sulphuret	50
Zirconia	48
Zirconium	40

TABLE
OF
PHARMACEUTICAL EQUIVALENTS.

				Atomic Numbers.
Acid, acetic (dry)	4 carbon	6 × 4	= 24	50
	3 oxygen	8 × 3	= 24	
	2 hydrogen		= 2	
(crystallized or glacial)	1 dry acid		= 50	59
	1 water		= 9	
arsenious (dry)	1 arsenic		= 38	54
	2 oxygen	8 × 2	= 16	
benzoic (dry)	15 carbon	6 × 15	= 90	120
	3 oxygen	8 × 3	= 24	
	6 hydrogen		= 6	
boracic (dry)	1 boron		= *8	24
	2 oxygen	8 × 2	= 16	
(crystallized)	1 dry acid		= 24	42
	2 water	9 × 2	= 18	
carbonic (dry)	1 carbon		= 6	22
	2 oxygen	8 × 2	= 16	
citric (dry) .	4 carbon	6 × 4	= 24	58
	4 oxygen	8 × 4	= 32	
	4 hydrogen		= 2	

---

* Mr. Brande states the atomic number of boron to be 6, and consequently boracic acid 22. According to the researches of Thomson and others, the numbers should be 8 and 24.

Acid, citric, (dry) crystallized	1 dry acid		= 58	76
	2 water	9 × 2	= 18	
hydriodic, (dry)	1 iodine*		= 124	125
	1 hydrogen		= 1	
hydrocyanic, dry	1 cyanogen		= 26	27
	1 hydrogen		= 1	
muriatic (dry)	1 chlorine		= 36	37
	1 hydrogen		= 1	
nitric (dry .	1 nitrogen		= 14	54
	5 oxygen	8 × 5	= 40	
(liquid, sp. gr. 1·5)	1 dry acid		= 54	72
	2 water	9 × 2	= 18	
oxalic (dry) .	2 carbon	6 × 2	= 12	36
	3 oxygen	8 × 3	= 24	
crystallized	1 dry acid		= 36	72
	4 water	9 × 4	= 36	
phosphoric (dry)	1 phosphorus		= 12	28
	2 oxygen	8 × 2	= 16	
succinic (dry, or anhydrous crystals)	4 carbon	6 × 4	= 24	50
	3 oxygen	8 × 3	= 24	
	2 hydrogen		= 2	
sulphuric, (dry)	1 sulphur		= 16	40
	3 oxygen	8 × 3	= 24	
(liquid sp. gr. 1·85)	1 dry acid		= 40	49
	1 water		= 9	
tartaric (dry)†	4 carbon	6 × 4	= 24	66
	5 oxygen	8 × 5	= 40	
	2 hydrogen		= 2	
(crystallized)	1 dry acid		= 66	75
	1 water		= 9	

---

* Mr. Brande gives 125 as the number for iodine, and 126 therefore for hydriodic acid.

† Brande and Phillips mention 3 atoms of hydrogen; and 67 as the number for tartaric acid.

Calcium			20
chloride	1 calcium 1 chlorine	= 20 = 36	56
Calcium, Oxide (see *Lime*)	1 calcium 1 oxygen	= 20 = 8	28
Carbon			6
Carburet of Nitrogen (cyanogen)	2 carbon 1 nitrogen	6 × 2 = 12 = 14	26
Chlorine			36
Cinchonia			315
Copper			64
acetate (dry)	1 peroxide of copper 1 acetic acid	= 80 = 50	130
(crystallised common verdigris)	1 acetate 6 water	= 130 9 × 6 = 54	184
binacetate (dry)	1 peroxide of copper 2 acetic acid	= 80 50 × 2 = 100	180
binacetate (crystallized or distilled verdigris)	1 binacetate 3 water	= 180 9 × 3 = 27	207
ammoniated	1 bisulphate of copper 1 ammonia 6 water	= 160 = 17 9 × 6 = 54	231
peroxide	1 copper 2 oxygen	= 64 8 × 2 = 16	80
bisulphate (dry)	1 peroxide of copper 2 sulphuric acid	= 80 40 × 2 = 80	160
(crystallized)†	1 bisulphate of copper 10 water	= 160 9 × 10 = 90	250

---

* The sulphas cupri of the Pharmacopœia.

Ammonia, sulphate (crystallized)	1 ammonia		= 17	75
	1 sulphuric acid		= 40	
	2 water		= 18	
Antimony	(Brande 45)			44
chloride	1 antimony		= 44	80
	1 chlorine		= 36	
protoxide	1 antimony		= 44	52
	1 oxygen		= 8	
pulvis antimonialis of Pharmacop.	peroxide of antimony		= 35	100
	phosphate of lime		= 65	
peroxide	1 antimony		= 44	60
	2 oxygen	8 × 2	= 16	
sulphuret*	1 antimony		= 44	60
	1 sulphur		= 16	
potassa tartrate (dry)	3 protoxide of antimony		= 156	336
	1 bitartrate of potassa		= 180	
(hydrated)	1 antimony potassa tartrate		= 836	354
	†2 water		= 18	
Arsenic				38
oxide (arsenious acid	1 arsenic		= 38	54
	2 oxygen		= 16	
Bismuth				72
oxide	1 bismuth		= 72	80
	1 oxygen		= 8	
subnitrate	2 oxide of bismuth	80 × 2	= 160	214?
	1 nitric acid		= 54	
Boron				8?

---

* Rose and Berzelius have ascertained, that the combining proportions of the elements of the red and black sulphuret of antimony are the same, and consequently the atomic number of each will be 60.

† According to Mr. R. Phillips, it contains 3 water.

CALCIUM				20
chloride	1 calcium		= 20	56
	1 chlorine		= 36	
CALCIUM, Oxide (see *Lime*)	1 calcium		= 20	28
	1 oxygen		= 8	
CARBON				6
CARBURET of NITROGEN (cyanogen)	2 carbon	6 × 2	= 12	26
	1 nitrogen		= 14	
CHLORINE				36
CINCHONIA				315
COPPER				64
acetate (dry)	1 peroxide of copper		= 80	130
	1 acetic acid		= 50	
(crystallised common verdigris)	1 acetate		= 130	184
	6 water	9 × 6	= 54	
binacetate (dry)	1 peroxide of copper		= 80	180
	2 acetic acid	50 × 2	= 100	
binacetate (crystallized or distilled verdigris)	1 binacetate		= 180	207
	3 water	9 × 3	= 27	
ammoniated	1 bisulphate of copper		= 160	231
	1 ammonia		= 17	
	6 water	9 × 6	= 54	
peroxide	1 copper		= 64	80
	2 oxygen	8 × 2	= 16	
bisulphate (dry)	1 peroxide of copper		= 80	160
	2 sulphuric acid	40 × 2	= 80	
(crystallized)†	1 bisulphate of copper		= 160	250
	10 water	9 × 10	= 90	

---

* The sulphas cupri of the Pharmacopœia.

MERCURY, bipersulphate (dry)	1 peroxide of mercury 2 sulphuric acid	=216 40 × 2 = 80	296
protosulphuret	1 mercury 1 sulphur	=200 = 16	216
bisulphuret	1 mercury 2 sulphur	=200 16 × 2 = 32	232

Sulphuretum nigrum (pharm.) is a chemical mixture of the proto- (Phillips) or bi- (Brande) sulphuret and sulphur.

Mercury,* bicyanuret	1 mercury 2 cyanogen	=200 26 × 2 = 52	252
protonitrate (dry)	1 protoxide of mercury 1 nitric acid	=208 = 54	262
bipernitrate	1 peroxide of mercury 2 nitric acid	=216 54 × 2 = 108	324
MORPHIA			325†
NITROGEN			14
OXYGEN			8
PHOSPHORUS			12
POTASSA (dry)	1 potassium 1 oxygen	= 40 = 8	48
(hydrate)	1 dry potassa 1 water	= 48 = 9	57
acetate (dry)	1 potassa 1 acetic acid	= 48 = 50	98
arseniate (dry)	1 potassa 1 arsenic acid	= 48 = 62	110

---

* Syn. prussiate of mercury, cyanide or cyanuret.

† The number for morphia is uncertain. The above is *Mr. Brande's*.

Lead carbonate	1 protoxide of Lead 1 carbonic acid	= 112 = 22	134
Lime .	1 calcium 1 oxygen	= 20 = 8	28
carbonate	1 lime 1 carbonic acid	= 28 = 22	50
hydrate (slaked lime)	1 lime 1 water	= 28 = 9	37
phosphate	1 lime 1 phosphoric acid	= 28 = 28	56
sulphate (dry)	1 lime 1 sulphuric acid	= 28 = 40	68
tartrate (dry)	1 lime 1 tartaric acid	= 28 = 66	94
Magnesia .	1 magnesium 1 oxygen	= 12 = 8	20
carbonate (dry)	1 magnesia 1 carbonic acid	= 20 = 22	42
sulphate (dry)	1 magnesia 1 sulphuric acid	= 20 = 40	60
(crystallized)	1 dry sulphate 7 water	= 60 9 × 7 = 63	123
Mercury .	.	.	200
protoxide	1 mercury 1 oxygen	= 200 = 8	208
peroxide	1 mercury 2 oxygen	= 200 8 × 2 = 16	216
protochloride (calomel)	1 mercury 1 chlorine	200. = 36	236
bichloride (corrosive sublimate)	1 mercury chlorine	200 36 × 2 = 72	272
protosulphate (dry)	1 protoxide of mercury 1 sulphuric acid	= 208 = 40	248

POTASSIUM, chloride	1 potassium		= 40	76
	1 chlorine		= 36	
sulphuret	1 potassium		= 40	56
	1 sulphur		= 16	
bisulphuret	1 potassium		= 40	72
	2 sulphur	16 × 2	= 32	
QUINIA	.	.	.	360
SILVER	.	.	.	110
oxide	1 silver		= 110	118
	1 oxygen		= 8	
chloride	1 silver		= 110	146
	1 chlorine		= 36	
nitrate	1 oxide of silver		= 118	172
	1 nitric acid		= 54	
SODA (dry)	1 sodium		= 24	32
	1 oxygen		= 8	
hydrated	1 dry soda		= 32	41
	1 water		= 9	
acetate (dry)	1 soda		= 32	82
	1 acetic acid		= 50	
(crystallized)	1 dry acetate		= 82	136
	6 water	9 × 6	= 54	
carbonate (dry)	1 soda		= 32	54
	1 carbonic acid		= 22	
crystallized)*	1 dry carbonate		= 54	144
	10 water	9 × 10	= 90	
citrate (dry)	1 soda		= 32	90
	1 citric acid		= 58	
sulphate (dry)	1 soda		= 32	72
	1 sulphuric acid		= 40	
(crystallized)	1 dry sulphate		= 72	162
	10 water	9 × 10	= 90	

---

* Sodæ subcarbonas of the Pharmacopœia.

POTASSA, arsenite (dry)	1 potassa	= 48	102
	1 arsenious acid	= 54	
bicarbonate (dry)	1 potassa	= 48	92
	2 carbonic acid 22 × 2	= 44	
(crystallized)*	1 dry bicarbonate	= 92	101
	1 water	= 9	
bisulphate (dry)	1 potassa	= 48	128
	2 sulphuric acid 40 × 2	= 80	
(crystallized)	1 dry bisulphate	= 128	146
	2 water	= 18	
bitartrate (dry)	1 potassa	= 48	180
	2 tartaric acid 66 × 2	= 132	
(crystallized)	1 dry bitartrate	= 180	198
	2 water	= 18	
carbonate (dry)†	1 potassa	= 48	70
	1 carbonic acid	= 22	
citrate (dry)	1 potassa	= 48	106
	1 citric acid	= 58	
nitrate	1 potassa	= 48	102
	1 nitric acid	= 54	
sulphate	1 potassa	= 48	88
	1 sulphuric acid	= 40	
sulphuret (of Pharmacopœia)	3 sulphuret of potassium 56 × 3	= 168	256
	1 sulphate of potash	= 88	
tartrate (dry)	1 potassa	= 48	114
	1 tartaric acid	= 66	
POTASSIUM	. . . . .		40

---

* Potassæ carbonas of the Pharmacopœia.

† Potassæ subcarbonas of the Pharmacopœia.

POTASSIUM, chloride	1 potassium		= 40	76
	1 chlorine		= 36	
sulphuret	1 potassium		= 40	56
	1 sulphur		= 16	
bisulphuret	1 potassium		= 40	72
	2 sulphur	16 × 2	= 32	
QUINIA				360
SILVER				110
oxide	1 silver		= 110	118
	1 oxygen		= 8	
chloride	1 silver		= 110	146
	1 chlorine		= 36	
nitrate	1 oxide of silver		= 118	172
	1 nitric acid		= 54	
SODA (dry)	1 sodium		= 24	32
	1 oxygen		= 8	
hydrated	1 dry soda		= 32	41
	1 water		= 9	
acetate (dry)	1 soda		= 32	82
	1 acetic acid		= 50	
(crystallized)	1 dry acetate		= 82	136
	6 water	9 × 6	= 54	
carbonate(dry)	1 soda		= 32	54
	1 carbonic acid		= 22	
crystallized)*	1 dry carbonate		= 54	144
	10 water	9 × 10	= 90	
citrate (dry)	1 soda		= 32	90
	1 citric acid		= 58	
sulphate (dry)	1 soda		= 32	72
	1 sulphuric acid		= 40	
(crystallized)	1 dry sulphate		= 72	162
	10 water	9 × 10	= 90	

---

* Sodæ subcarbonas of the Pharmacopœia.

SODA, tartrate (dry)	1 soda	=	32	98
	1 tartaric acid	=	66	
(crystallized)	1 dry tartrate	=	98	116
	2 water	9 × 2 =	18	
potassatartrate	1 soda	=	32	212
	1 potassa	=	48	
	2 tartaric acid	65 × 2 =	132	
hydrated sesquicarbonate*	2 soda	32 × 2 =	64	166
	3 carbonic acid	22 × 3 =	66	
	4 water	9 × 4 =	36	
bicarbonate	1 soda	=	32	76
	2 carbonic acid	22 × 2 =	44	
SODIUM				24
chloride (common salt)	1 sodium	=	24	60
	1 chlorine	=	36	
oxide (soda)	1 sodium	=	24	32
	1 oxygen	=	8	
STRYCHNIA				380
SUGAR (prout)	1 oxygen	=	8	15
	1 hydrogen	=	1	
	1 carbon	=	6	
SULPHUR				16
hydrated†	1 sulphur	=	16	25
	1 water	=	9	
SULPHURETTED hydrogen	1 sulphur	=	16	17
	1 hydrogen	=	1	
TIN				58
WATER	1 oxygen	=	8	9
	1 hydrogen	=	1	

---

* Sodæ carbonas of the Pharmacopœia.

† This is the sulphur præcipitatum of the Pharmacopœia.

ZINC			34.
oxide	1 zinc	= 34	42
	1 oxygen	= 8	
carbonate	1 oxide of zinc	= 42	64
	1 carbonic acid	= 22	
sulphate (dry)	1 oxide of zinc	= 42	82
	1 sulphuric acid	= 40	
(crystallized)	1 dry sulphate	= 82	145
	7 water	9 × 7 = 63	

QUESTIONS

IN

CHEMICAL DECOMPOSITIONS.

1. What is the composition of acetic acid?

2. How is vinegar obtained, and what is the theory of its formation?

3. What does common vinegar contain?

4. Why is the first and last pint rejected in distilling acetic acid?

5. What is benzoic acid composed of?

6. What takes place in its preparation?

7. What is meant by the term balsam?

8. What is the composition of citric acid?

9. What decomposition takes place in making it?

10. What is the atomic number, and composition, of dry muriatic acid?

11. What is the decomposition in this preparation?

* What are the properties of chlorine?

12. What is the composition of nitric acid?

* How many are the combinations of nitrogen with oxygen, and what are they?

13. What is the decomposition in making this acid?

14. What are the reasons for adding an excess of sulphuric acid?

15. What is the composition of dry and liquid sulphuric acids?

16. How is sulphuric acid obtained?

17. What is the composition of crystallized tartaric acid?

18. What is the decomposition in making it?

19. What is the composition of subearbonate of ammonia?

20. What is the decomposition in preparing it?

21. How is it that the carbonic acid is in excess?

22. What is the composition of liquor ammoniæ?

23. What decomposition takes place?

24. What is ammoniacal gas?

25. What is its composition, and atomic number?

26. What is dry acetate of ammonia composed of?

27. What change takes place in the process?

28. What is the composition of potassa cum calce?

29. Is there any decomposition in making it?

30. What is the composition of liquor potassæ?

31. What is the composition of potash?

* What are the properties of potassium?

32. What is the decomposition in making liquor potassæ?

33. What is potassa fusa composed of?

34. What takes place in the process?

35. What is the composition of acetate of potash?

36. What is the decomposition?

37. What is the composition of carbonate of potash?

38. How is the solution saturated with carbonic acid?

39. What is the composition of subcarbonate of potash?

40. What is the object of the process?

41. What is the composition of sulphate of potash?

42. What change is effected in the preparation?

43. What is the composition of tartrate of potash?

44. What is the decomposition in making it?

45. What is the composition of carbonate of soda?

46. What is soda composed of?

* In what does sodium differ from potassium?

47. How is the salt saturated with carbonic acid, and in what state is it usually found?

48. What change takes place in making subcarbonate of soda?

49. What is the composition of dry subcarbonate of soda?

50. What is the object of the process?

51. What is the composition of dry sulphate of soda?

52. What takes place in the process?

53. What is soda tartarizata composed of?

54. What decomposition ensues?

55. What is the composition of crystallized alum?

56. What change takes place in making alumen exsiccatum?

57. What is the composition of lime?

58. What effect has the heat?

59. What is the composition of magnesia?

60. Why is the heat applied?

61. What is the composition of subcarbonate of magnesia?

62. What is the decomposition in making it?

63. What is the composition of præcipitated sulphuret of antimony?

* How many combinations are there of antimony and oxygen?

64. What does sulphuret of antimony consist of?

65. What decomposition takes place?

66. What is tartarized antimony composed of?

67. How is glass of antimony made?

68. What is the decomposition in making tartar emetic?

69. What is the composition of pulvis antimonialis?

70. What effect does the heat produce?

71. What is the result?

72. What is the composition of nitrate of silver?

73. Describe its preparation.

74. What is the composition of sublimed white arsenic?

* What combinations are there of oxygen and arsenicum?

75. What is the object of the preparation?

76. What is the composition of the arsenical compound?

77. What decomposition takes place?

78. What is the composition of subnitrate of bismuth?

79. What changes take place?

80. What is the composition of cuprum ammoniatum?

81. What is the decomposition?

* How many oxides of copper are there?

82. What is the composition of ferrum ammoniatum?

83. What are the changes in the process?

84. What is the composition of ferri subcarbonas?

85. What changes does it undergo by exposure to the air?

86. What is crystallized sulphate of iron composed of?

87. What are the chemical changes in making it?

88. What is the composition of ferrum tartarizatum?

89. What are the changes taking place in its preparation?

90. What is the composition of liquor ferri alkalini?

91. What is the decomposition?

92. What is the composition of tinctura ferri muriatis?

93. What decomposition takes place?

94. What is the composition of vinum ferri?

95. What is the decomposition?

96. What is the composition of hydrargyrum c. creta?

* What are the combinations of mercury and oxygen?

97. What changes take place in preparing it?

98. What is the composition of nitric oxide of mercury?

99. What effect has the heat when applied?

100. How is grey oxide of mercury made?

101. What is the composition of red oxide of mercury?

102. What degree of heat is required for it?

103. What is the composition of corrosive sublimate?

104. What are the various changes in its preparation?

105. What is the composition of the white precipitate?

106. What are the chemical changes in making it?

107. What is separated in purifying mercury?

108. What is the composition of calomel?

109. What is the decomposition in making it, and why is the muriate of ammonia added?

110. What is the composition of black sulphuret of mercury?

111. Is it a proto or bi-sulphuret of mercury?

112. What is the composition of red sulphuret?

113. What is the difference between the preparations?

114. What is the composition of plumbi acetas?

* How many oxides of lead are there?

115. What is the decomposition?

116. What is the composition of liquor plumbi subacetatis?

117. What is the composition of oxide of zinc?

118. What is the decomposition in making it?

119. What is the composition of sulphate of zinc?

120. What are the changes effected in making it?

121. What is the composition of sulphuret of potash?

122. What decomposition takes place in making it?

123. What is the composition of sulphur præcipitatum?

* What are the combinations of sulphur and oxygen?

124. What is the decomposition in making precipitated sulphur?

125. What is decomposed in making mistura ferri composita?

126. What is the composition of alcohol?

127. How is alcohol obtained?

128. What is the use of subcarbonate of potash in purifying it?

129. What decomposition takes place in making spiritus ammoniæ?

130. What is the composition of sulphuric æther?

131. In what does it differ from alcohol?

132. What change is effected in making rectified æther?

133. What is the composition of water?

134. What does atmospheric air contain?

ANIMAL CHEMISTRY.

1. What are the component principles of animal matter?

2. What changes take place in the blood by standing?

3. What is serum composed of?

4. What is the composition of the crassamentum?

5. Of what is bile composed?

6. What do biliary calculi consist of?

7. What are the chief component parts of bone?

8. Of what is brain composed?

9. What is the composition of chyle?

10. Of what do those concretions found in the pineal, salivary, pulmonary, and prostate glands, consist?

11. What is the composition of chalk-stones?

12. What is gastric juice composed of?

13. Of what do the humors of the eye consist?

14. What is the composition of ligaments and membranes?

15. What is milk composed of?

16. Of what is the mucus of the nose composed?

17. What does muscle consist of?

18. What is the composition of the nails?

19. To what is pancreatic juice analogous?

20. What is the composition of saliva?

21. Of what does synovia consist?

22. Of what are tears composed?

23. What is the composition of the substance of the teeth?

24. What do tendons contain?

25. What is urine composed of?

26. How many kinds of urinary calculi are there?

TOXICOLOGY.

1. What is toxicology?
2. What is meant by a poison?
3. How are they classed?
4. What are the corrosive poisons?
5. Which are the principal ones?
6. What are the symptoms occasioned by corrosive or acrid poisons?
8. How is poisoning by corrosive sublimate to be known?
9. How are the preparations of copper distinguished?
10. How are mineral acids distinguished?
11. How are potash, soda, and ammonia distinguishable?
12. How may ammonia be known?
13. What is the treatment for corrosive poisons?
14. What is meant by antidotes?
15. What is the antidote for arsenic?
16. What for corrosive sublimate?
17. What is the antidote for tartar emetic?
18. What should be given against copper?
19. What are the antidotes for barytes?
20. What for lunar caustic?
21. What are the antidotes for acids?
22. What for alkalies?
23. What other remedy is there generally applicable?
24. Which are the principal acrid poisons?

25. What are the symptoms occasioned by them?

26. What is the treatment?

27. What are the principal narcotic poisons?

28. What symptoms do they produce?

29. What is the treatment for them?

30. What are the astringent poisons?

31. What symptoms do they give rise to?

32. What treatment is required for them?

33. What is meant by septic poisons?

34. What symptoms do they produce?

35. What is the treatment of them?

36. What are the symptoms of poisoning by fishes?

37. How are they to be treated?

TOXICOLOGICAL CHEMISTRY.

38. What are the tests for arsenic?

39. What are the tests for corrosive sublimate?

40. What are the tests for the preparations of copper?

41. What are the tests for tartar emetic?

42. What are the tests for the acids?

43. What acids are most used for poisoning?

44. What are the tests for sulphuric acid?

45. What are the tests for muriatic acid?

46. How may nitric acid be known?

47. What is the best test for oxalic acid?

48. What are the tests for prussic acid?

49. What are the tests for lead?

50. What are the tests for sulphate of zinc?
51. What are the tests for nitrate of silver?
52. What are the tests for iodine?
53. How are the alkalies discovered?
54. How can potash be known from soda?
55. How may ammonia be known?
56. What are the tests for lime?
57. How may barytes be known?
58. What will discover nitrate of potash?
59. What are the tests for muriate of ammonia?

* How can vegetable poisons be detected?

MATERIA MEDICA.

1. What is meant by alteratives?
2. What are the principal ones?
3. What is the action of antacids?
4. Name the principal ones?
5. What is the property of anthelmintics?
6. How do they act?
7. Which are the principal mechanical anthelmintics?
8. What are called antiseptics?
9. What are the principal ones?
10. What is the use of antispasmodics?
11. Name the principal ones.
12. What are aperients?
13. What is the action of astringents?
14. Name the principal ones.
15. What is the action of carminatives?

16. Which are the principal ones?
17. What are cathartics?
18. Name the gentle cathartics.
19. Which are the powerful cathartics?
20. What is meant by demulcents?
21. What action do diaphoretics possess?
22. Name the principal ones?
23. What is the use of diluents?
24. What is the action of diuretics?
25. Name the principal ones.
26. What is the action of emetics?
27. What are the principal ones?
28. What is understood by emmenagogues?
29. Which are the principal?
30. What is the use of emollients?
31. Name them.
32. What effect do errhines produce?
33. Describe the principal ones.
34. How do escharotics act?
35. Which are they principally?
36. What is the action of expectorants?
37. Name the principal ones.
38. What is meant by lithontriptics?
39. What are the principal ones?
40. How do narcotics act?
41. Which are the principal ones?
42. What is the effect of sialagogues?
43. Name the chief of them.
44. What is the use of stimulants?
45. Name the principal ones.
46. How do tonics act?
47. What are the principal ones?

ANATOMY.

1. What are the viscera of the body?
2. Where are they situated?
3. What bones form the cranium?
4. What are the contents of the cranium?
5. How many membranes has the brain?
6. What kind of membrane is the dura mater?
7. What is seen on the outer surface?
8. What forms the sinuses?
9. How are the processes formed?
10. What is the course of the falx cerebri?
11. What is the situation of the tentorium?
12. What is the course of the falx cerebelli?
13. What arteries supply the dura mater?
14. What kind of membrane is the pia mater?
15. Describe the tunica arachnoidea.
16. How is the brain divided?
17. What is the situation and divisions of the cerebrum?
18. Of what is the brain composed?
19. What name is applied to each substance?
20. What is seen upon separating the hemispheres?
21. How is the centrum ovale formed?
22. What is situated beneath the corpus callosum and centrum ovale?
23. How many ventricles are there?
24. What is the course of the lateral ventricles?
25. How are the cornua formed?

26. What parts form the floor of the lateral ventricles?

27. Where are the corpora striata situated?

28. What is the situation of the thalami optici, and how are they connected?

29. Where is the tænia semicircularis situated?

30. Where is the fifth ventricle situated?

31. Describe the fornix.

32. What is seen on its under surface?

33. What is formed by the thin edge of its posterior crura?

34. With what is the posterior edge connected?

35. What forms the floor of the digital cavity?

36. What forms the floor of the inferior cornu of the lateral ventricles?

37. Where is the foramen of Monro situated?

38. What is the situation of the choroid plexuses?

39. Describe them.

40. Where is the velum interpositum situated?

41. What is the situation of the pineal gland?

42. How are the corpora madrigemina named?

43. Where is the fissure of Bichat?

44. Describe the third ventricle?

45. Where is the anterior commissure situated?

46. What is the situation of the posterior commissure?

47. In what does the third ventricle terminate anteriorly?

48. What is its posterior termination?

49. Where is the iter ad infundibulum situated?

50. Describe the infundibulum.

51. What is the situation of the pituitary gland?

52. What is the situation of the canalis medius?

53. What parts are seen at the base of the brain?

54. Where are the corpora albicantia situated?

55. What is seen behind them?

56. What are the crura cerebri?

57. What is their internal structure?

58. Where is the cerebellum situated?

59. How is it divided?

60. What is the cerebellum composed of?

61. What is the corpus dentatum?

62. What appearance has the surface of the cerebellum?

63. Where are the vermiform appendages situated?

64. Describe the crura cerebelli?

65. What is the situation of the fourth ventricle?

66. What are its boundaries?

67. With what does it communicate?

68. Where is the calamus scriptorius seen?

69. What forms the pons varolii?

70. What passes along a groove in its centre?

71. What is the situation of the foramen cœcum?

72. What is the situation and form of the medulla oblongata?

73. Describe the medulla spinalis.

74. What is its structure?

75. Whence are the arteries of the brain?

76. What branches does the carotid give off?

77. What is the course of the vertebral arteries within the cranium?

78. What forms the circle of Willis?

79. Where do the veins terminate?

80. What are the nerves?

81. What is their structure?

82. With what parts do they communicate?

83. Where are they distributed?

84. What do they form by their communication?

85. What are the ganglions?

86. Where do the nerves arise?

87. How many are the cerebral nerves?

88. Where does the first pair arise?

89. What are the origins of the second pair?

90. What is the origin and distribution of the third pair?

91. Where does the fourth pair arise?

92. What is the origin of the fifth pair?

93. What is the distribution of the ophthalmic branch?

94. What are the divisions of the superior maxillary branch?

95. What are the branches of the inferior maxillary?

96. Where does the sixth pair arise?

97. What does the seventh pair consist of?

* What is the distribution of the portio dura?

98. What is the course of the portio mollis?

99. Of what does the eighth pair consist?

* What is the distribution of the glosso-pharyngeus, par vagum, and nervus accessorius?

100. Where does the ninth pair arise?

101. What is the number of the spinal nerves?

102. How do they arise?

103. What filaments form the phrenic nerve?

104. What is the course of the sympathetic?

105. Where does it commence?

106. Where is the superior cervical ganglion situated, and what branches does it give off?

107. Where is the middle cervical ganglion found, and what filaments arise from it?

108. What is the situation of the inferior cervical ganglion?

109. What is its distribution in the thorax and abdomen?

110. How is the renal plexus formed, and what does it supply?

111. Where is the lenticular ganglion found, and what does it supply?

112. What are the appendages of the eye?

113. What is the situation and use of the eyebrows?

114. What is the structure of the eyelids?

115. What is their use?

116. What is the use of the meibomian glands?

117. Of what do the lachrymal organs consist?

118. What is the use of the tears?

119. Where is the lachrymal gland situated, and what are its ducts?

120. What is the caruncula lachrymalis?

121. Where is the valvula semilunaris found?

122. Of what is the ball of the eye composed?

123. Name the coats of the eye.

124. What is the tunica conjunctiva?

125. What is the structure of the sclerotica?

126. What is the nature of the cornea?

127. What sort of membrane is the choroïd coat?

128. What is its use?

129. How is the retina formed?

130. What are its coverings?

131. What is the foramen centrale?

132. Describe the iris.

133. What is its function?

134. Where are the outer and inner chambers situated?

135. What forms the ciliary ligament?

136. What humors are there, besides the aqueous?

137. Where is the vitreous humor situated?

138. What is the use of the membrana hyaloidea?

139. What is the structure of the crystalline lens?

140. What is the water named, which is contained between the lens and its capsule?

141. Whence does the eye receive its blood?

142. What nerves are distributed to the eye?

143. What are its moving powers?

144. What is the mechanism of vision?

145. What bones bound the mouth?

146. What is the number of teeth in the adult?

147. What are the soft parts of the mouth?

148. How are the cheeks and lips formed?

149. Describe the soft palate?

150. Where is the uvula situated?

151. Of what do the salivary glands consist?

152. Where is the parotid gland situated, and where does its duct terminate?

153. Give the situation of the submaxillary glands?

154. Where are the sublingual found?

155. How many openings has the mouth?

156. What forms the isthmus faucium?

157. How are the arches of the palate formed?

158. What is contained in the anterior arch?

159. What in the posterior arch?

160. Where are the tonsils found?

161. What are the boundaries of the pharynx?

162. What muscles surround it?

163. How many openings has it?

164. Describe the œsophagus.

165. What is the structure of the larynx?

166. What are its cartilages?

167. Where is the epiglottis situated?

168. What is the position of the cricoid cartilage?

169. Where are the arytenoid cartilages situated?

170. What is the situation and divisions of the thyroid cartilage?

171. What is the situation of the thyroid gland?

172. What is the situation of the chordæ vocales?

173. What is the glottis?

174. Name the arteries of the larynx?

175. Whence are its nerves?

176. What is the extent of the trachea?

177. What is the structure of the trachea?

178. How do the bronchi terminate?

179. What are the boundaries of the thorax?

180. What are its contents?

181. Describe the pleura.

182. How are the mediastina formed?

183. What is contained in the anterior mediastinum?

184. What does the posterior mediastinum contain?

185. What are the lungs?

186. What are the divisions of the right lung?

187. What is the structure of the lungs?

188. What arteries ramify through them?

189. What are they named?

190. Whence are the nerves?

191. What is the structure of the pericardium?

192. Where is the heart situated?
193. What are its divisions?
194. What is its structure?
195. How many cavities has it?
196. How are the auricles separated?
197. What separates the ventricles?
198. What are the openings into the right auricle?
199. What are its eminences and depressions?
200. What is the tricuspid valve?
201. How is the opening of the pulmonary artery protected?
202. What is observed in the right ventricle?
203. How many openings are there into the left auricle?
204. How many into the left ventricle?
205. What is seen internally?
206. How is the left auricular ventricular opening protected?
207. What are the arteries and veins of the heart?
208. What is the course of the aorta?
209. What branches are given off from the arch?
210. What branches does the thoracic aorta give off?
211. What branches are given off from the abdominal aorta?
212. How many coats has an artery?
213. What are the coats of a vein?
214. What is the course of the veins?

215. How is the vena azygos formed?

216. What is the course of the azygos minor?

217. What is the course of the thoracic duct?

218. What is the situation and connexions of the diaphragm?

219. How many openings are there in the diaphragm?

220. What are the boundaries and divisions of the abdomen?

221. What is the extent of the epigastric region?

222. What are the limits of the umbilical region?

223. What are the boundaries of the hypogastric region?

224. What are the contents of the abdomen?

225. Of what does the alimentary canal consist?

226. Describe the peritoneum.

227. What are the reflexions of the peritoneum?

228. What are the divisions and figure of the stomach?

229. How many coats has the stomach?

230. Whence does it receive its arteries?

231. What is the use of the villous coat?

232. Which are the small intestines?

233. In what does the duodenum differ from the others?

234. What is the course of the duodenum?

235. In what part do the biliary and pancreatic ducts terminate?

236. Where does the jejunum terminate?

237. How much of the small intestines is called jejunum, and how much ilium?

238. What is the distinguishing character of the jejunum.

239. Which are the large intestines?

240. What characterizes the large intestines?

241. Which is the first portion?

242. How is the valvula ilii formed?

243. What is the appendix vermiformis?

244. What are the divisions of the colon?

245. What are the appendices epiploicæ?

246. Where does the rectum commence?

247. What is its character?

248. What are the arteries of the intestines?

249. Where do their veins terminate?

250. Whence are the nerves?

251. Describe the liver.

252. What are the ligaments of the liver?

253. How are they formed?

254. What are the fissures or depressions?

255. What is the structure of the liver?

256. What are the blood-vessels which supply it?

257. How is the vena portæ formed?

258. What are the excretory ducts of the liver?

259. What is the situation of the gall-bladder?

260. Whence are its vessels and nerves?

261. What are the situation and connexions of the pancreas?

262. Whence are its arteries?

263. Where is the pancreatic juice conveyed?
264. What is the situation of the spleen?
265. How is it formed?
266. Whence are its arteries?
267. What is the situation of the kidneys?
268. Which kidney is the highest?
269. What is their structure?
270. Describe the secretion of urine?
271. What prevents the urine returning?
272. What are the blood-vessels of the kidney?
273. Which renal artery is the longest?
274. Which vein is the longest?
275. What are the renal glands?
276. How is the urine evacuated?
277. What does the male pelvis contain?
278. What is contained in the female pelvis?
279. What is the situation of the urinary bladder?
280. What is its extent, when distended?
281. What are its divisions?
282. What are its coats?
283. How many openings are there into it?
284. Whence are the arteries of the bladder?
285. Describe the testes?
286. What are the coats of the testicle?
287. What is the structure of the testicle?
288. Whence are its arteries?
289. Where do the spermatic veins terminate?
290. What is the course of the vas deferens?
291. What is the situation of the vesiculæ seminales?

292. What is the form and situation of the prostate gland?

293. Of what does the spermatic cord consist?

294. What are the divisions of the uterus?

295. What are its coats?

296. How many openings are there into it?

297. What are the appendages?

298. How are the ligamenta lata formed?

299. What is the extent of the ligamenta rotunda?

300. What are the ovaries?

301. What are the connexions of the Fallopian tubes?

302. Where are the Fallopian tubes open?

303. What is the extent of the vagina?

304. How is it covered?

305. Whence are the uterine vessels?

306. From whence is the uterus supplied with nerves?

307. What is the membrana pupillaris?

308. Where is the thymus gland situated?

309. What are the parts peculiar to the fœtal circulation?

310. What is the foramen ovale?

311. What is the use of the ductus arteriosus?

312. Where does the ductus venosus pass?

313. Where does the umbilical vein enter?

314. Where do the umbilical arteries arise?

315. Of what does the umbilical cord consist?

316. Of what parts does the ear consist?

317. Name the external parts?

318. Of what is the auricle composed?

319. What is the course of the meatus externus?

320. What is the use of the wax?

321. What is the function of the external meatus?

322. Where is the membrana tympani situated?

323. What parts form the internal ear?

324. What is the situation of the tympanum?

325. How many openings are there into it?

326. What lines it, and what does it contain?

327. What are the proper bones of the ear?

328. How are they connected together, and influenced?

329. What parts form the labyrinth?

330. What is the size and situation of the vestibule?

331. What foramina open into it?

332. Where is the cochlea situated?

333. What is its form?

334. What is the pillar named?

335. What passes through its centre?

336. With what parts do the canals of the cochlea communicate?

337. What is the shape of the canals, and what is their junction called?

338. What are the names of the semicircular canals?

339. Where are they situated?

340. What are their dimensions?

341. How do they terminate?

342. Where is the meatus auditorius situated?
343. How is it divided?
344. What is seen in the inferior fossula?
345. What passes through the middle of it?
346. What is seen in the back part of the inferior fossula?
347. What passes along the upper fossula?
348. Where does the canal of Fallopius terminate?
349. With what is the labyrinth lined?
350. What does it contain?
351. How is the sacculus vestibuli formed?
352. Whence are the arteries of the labyrinth derived?
353. What do the various cavities contain?
354. Whence do the nerves of the labyrinth proceed?
355. What are the divisions of the seventh pair of nerves?
356. Where does the portio mollis pass?
357. What is the course of the portio dura?
358. What is the course of the chorda tympani?
359. What is the distribution of the portio mollis?
360. What is the course of the branches to the cochlea?
361. How are the other filaments disposed?
362. What is the function of the portio mollis?

PHYSIOLOGY.

1. What are the agents of mastication and insalivation?
2. How is deglutition effected?
3. What is the process of digestion?
4. How is chylification effected?
5. By what means are the fæces excreted?
6. What is the course of the chyle?
7. What is the use of the spleen?
8. Describe the circulation of the blood.
9. How is respiration performed?
10. Describe the fœtal circulation.
11. What is the temperature of the blood, and the cause of its heat?
12. What is meant by secretion?
13. How are secretions divided?
14. What parts do the tears pass through?
15. What is their use?
16. Where is the milk secreted?
17. What parts secrete saliva?
18. Where is the gastric juice secreted?
19. What is secreted in the pancreas?
20. What parts does the bile pass through?
21. Describe the excretion of bile.
22. What is its use?
23. What parts does the urine pass through?
24. How is the urine prevented from returning?
25. How is the urine excreted?

26. What parts does the semen pass through?
27. What is the use of the vesiculæ seminales?
28. What is the use of the prostate gland?
29. What is the use of the uterus?
30. What is the theory of impregnation?
31. What are the functions of the brain?
32. What are the sensations?
33. What is their number?
34. Describe the mechanism of vision.
35. What is the use of the conjunctiva?
36. What is the use of the sclerotica?
37. Which coat of the eye is the most vascular?
38. What is the use of the pigmentum nigrum?
39. What is the function of the uvea?
40. What is the use of the ciliary processes?
41. What of the eyebrows?
42. What is the action of the eyelids?
43. Of what use are the meibomian glands?
44. How is hearing effected?
45. What is the use of the Eustachian tube?
46. What is the use of the mastoid cells?
47. What is the use of the fenestra rotunda and fenestra ovalis?
48. How is taste produced?
49. What is the physiology of smell?
50. What are the functions of the skin?
51. What is the use of the cuticle?
52. How is voice produced?

PRACTICE OF MEDICINE.

1. What are the characters of fever?
2. How are fevers divided?
3. How are idiopathic fevers divided?
4. What are the characters of intermittent fever?
5. Of what does a paroxysm consist?
7. What are the symptoms of the cold stage?
8. What are the characters of the sweating stage?
9. What is the duration of the paroxysm?
10. How many kinds of intermittent fevers are there?
11. What distinguishes the quotidian?
12. In the tertian, when do the paroxysms recur?
13. When in the quartan?
14. What are the predisposing causes of intermittent fever?
15. What are the exciting causes?
16. What is the treatment?
17. What must be done in the various stages?
18. What must be given in the intermission?
19. What vegetable tonics are used for it?
20. Which of them is most efficacious?
21. Do these remedies completely subdue the fever?

22. With what states of the system are intermittents connected?

23. What are the forms in which cinchona is given?

24. What should prevent its use?

25. What may be combined with it, if it disagrees with the stomach?

26. When are stimulants admissible?

27. What mineral tonics are used?

28. What dose of liquor arsenicalis may be given?

29. What other remedies are useful before the paroxysm?

30. What is the cause of remittent fevers?

31. How are continued fevers divided?

32. What are the symptoms of synocha?

33. What are the causes?

34. What is the diagnostic character?

35. What is the treatment?

36. How is typhus divided by Dr. Cullen?

37. What are the symptoms of typhus mitior?

38. What are the causes?

39. What is the treatment?

40. When the inflammatory symptoms have subsided, what is the treatment?

41. What are the symptoms of typhus gravior?

42. What are the causes?

43. What is the treatment?

44. What are the symptoms of synochus?

45. What are the causes?

46. What is the treatment?

47. What are the characters of inflammation?

49. How does inflammation terminate?

50. What is meant by resolution?

51. What is suppuration?

52. What is meant by sphacelus, gangrene, or mortification?

53. What are the exciting causes of inflammation?

54. What is the treatment?

55. What must be done when suppuration has taken place?

56. What is the treatment for internal gangrene?

57. What are the symptoms of phrenitis?

58. What are the causes?

59. What are the diagnostic characters?

60. What is the treatment?

61. What are the symptoms of cynanche tonsillaris?

62. What is the treatment?

63. What are the symptoms of cynanche maligna?

64. What are its diagnostic characters?

65. What is the treatment?

66. What are the symptoms of mumps?

67. What is the treatment?

68. What are the symptoms of croup?

69. What are the causes?

70. What is the treatment?

71. What are the symptoms of pleuritis?

72. What is the treatment?

73. What are the symptoms of peripneumonia?

74. What is the treatment?
75. What are the symptoms of carditis?
76. What is the treatment?
77. What are the symptoms of hepatitis?
78. What is the diagnostic character?
79. What is the treatment?
80. How is chronic hepatitis known?
81. What are the symptoms of gastritis?
82. What is the diagnostic character?
83. What is the treatment?
84. 85. What are the symptoms and treatment of splenitis?
86. What are the symptoms of enteritis?
87. What are the diagnostic characters?
88. What is the treatment?
89. What are the symptoms of nephritis?
90. What form the diagnostic characters?
91. What is the treatment?
92. What are the symptoms of cystitis?
93. What is the treatment?
94. What are the symptoms of hysteritis?
95. What is the treatment?
96. What are the symptoms of peritonitis?
97. What are its diagnostic characters?
98. What is the treatment?
99. What is the treatment of rheumatism?
100. How is chronic rheumatism known?
101. What is the diagnostic character of rheumatism?
102. What is the treatment?
103. What are the symptoms of gout?
104. What is the treatment?

105. How must chronic gout be treated?
106. What are the symptoms of erysipelas?
107. What are the causes?
108. What is the treatment?
109. What are the symptoms of smallpox?
110. When does secondary fever come on?
111. What is meant by confluent smallpox?
112. What is the diagnostic character of smallpox?
113. What is the treatment?
114. What are the symptoms of chicken-pox?
115. What is the diagnostic character?
116. What is the treatment?
117. What are the symptoms of measles?
118. What are the diagnostic characters?
119. What is the treatment?
120. What are the symptoms of miliary fever?
121. What is the diagnostic character?
122. What is the treatment?
123. What are the symptoms of scarlatina simplex?
124. What is scarlatina anginosa?
125. What is the diagnostic character?
126. What is the treatment?
127. What is the treatment of scarlatina maligna?
128. What are the symptoms of urticaria?
129. What is the treatment?
130. What are the symptoms of pemphigus?
131. What is the treatment?
132. What are the symptoms of aphtha?
133. What is the treatment?

134. What are the symptoms of epistaxis?

135. What is the treatment?

136. What are the symptoms of hæmoptysis?

137. What is the treatment?

138. What are the symptoms of hæmatemesis?

139. What is the treatment?

140. What are the symptoms of hæmaturia?

141. What is the treatment?

142. What are the symptoms of hæmorrhoids?

143. What is the treatment?

144. What is to be done for the chronic form?

145. What are the symptoms of menorrhagia?

146. What is the treatment?

147. What are the symptoms of catarrh?

148. What is the treatment?

149. What are the symptoms of dysentery?

150. What is the treatment?

151. What are the symptoms of apoplexy?

152. What is peculiar to sanguineous apoplexy?

153. What is the treatment?

154. What are the symptoms of paralysis?

155. What is the treatment?

156. What are the symptoms of angina pectoris?

157. What is the treatment?

158. What are the symptoms of dyspepsia?

159. What is the treatment?

160. What are the symptoms of hypochondriasis?
161. What is the treatment?
162. What are the symptoms of chlorosis?
163. What is the treatment?
164. What are the symptoms of tetanus?
165. What is the treatment?
166. What are the symptoms of epilepsy?
167. What is the treatment?
168. What persons does chorea attack?
169. What are the symptoms?
170. What is the treatment?
171. What are the symptoms of asthma?
172. What is the treatment?
173. What is the treatment in the intermissions?
174. What are the symptoms of pertussis?
175. What is the treatment?
176. What are the symptoms of colic?
177. What is the treatment?
178. What are the symptoms of cholera morbus?
179. What is the treatment?
180. What are the symptoms accompanying diarrhœa?
181. What is the treatment?
182. What are the symptoms of hysteria?
183. What is the treatment?
184. What are the symptoms of phthisis?
185. What is the treatment?
186. What are the symptoms of anasarca?

187. What are the symptoms of ascites?
188. What are the symptoms of hydrothorax?
189. What is the treatment?
190. What are the symptoms of hydrocephalus?
191. What is the treatment?
192. How is the chronic form known?
193. What is the treatment?
194. What are the symptoms of icterus?
195. What is the treatment?

MIDWIFERY.

1. What is midwifery?
2. What is requisite to understand it?
3. What is the structure of the pelvis?
4. How are the bones connected together?
5. In what direction is the axis of the brim?
6. What is the length of the diameter of the brim?
7. What of the outlet?
8. What are the dimensions of the fœtal head?
9. Which part of the child is largest?
10. Which is meant by fontanels?
11. Where are the fontanels situated?
12. What is the period of utero-gestation?
13. What is the course of the ovum to the uterus?
14. What is the use of the liquor amnii?
15. What is the structure of the placenta?

16. How many placentæ in cases of twins?

17. What is the structure of the funis umbilicalis?

18. What are the dimensions of an average fœtus?

19. What are the symptoms of conception and pregnancy?

20. What is labour?

21. What are the diseases of pregnant women?

22. At what period can a fœtus be born and live?

23. What are the causes of labour?

24. What are the precursory symptoms of labour?

25. What is the duration of labour?

26. What indicates the first stage?

27. 28. 29. 30. What are the diagnostic characters?

31. What takes place in the second stage?

32. What is done in the third stage?

33. What is the general position of the fœtus in utero?

34. How does the fœtus present?

35. What presentations are most favorable?

36. How are labours classified?

37. What are the circumstances necessary for natural labour?

38. What is the mechanism of natural labour?

39. What takes place if the occiput rests on either sacro-iliac synchondrosis?

40. What is to be done in natural labour?

41. What remains to be done after the expulsion of the fœtus?

42. What is to be done in regard to the placenta?

43. What precaution is requisite after its expulsion?

44. How long should you wait to allow its expulsion?

45. What are the causes of its retention?

46. What is the management of each case?

47. How is its spasmodic retention to be treated?

48. What is the cause of its adhesion to the uterus?

49. What is the treatment of such cases?

50. What is meant by protracted labours?

51. What do lingering labours depend upon?

52. How are they to be treated?

53. What effect has plethora?

54. What is the consequence of excess of liquor amnii?

55. How is rigidity of the os and cervix uteri to be treated?

56. What must be done for rigidity of the external parts?

57. What is to be done for distention of the bladder?

58. What is the consequence of shortening of the funis?

59. What labours require instruments?

60. 61. 62. 63. 64. 65. What rules are requisite to be observed in their application?

66. How are the forceps to be applied?

67. When are the forceps required?

68. How are face presentations to be managed?

69. What can be done for presentations of the forehead and ear?

70. When are the long forceps requisite?

71. How must they be applied?

72. When is embryotomy requisite?

73. What distance from pubis to sacrum would prevent its performance?

74. What instruments are used?

75. How is it to be performed?

76. What are the symptoms of death of the fœtus in utero?

77. When is the Cæsarian section thought necessary?

78. How is it performed?

79. What is meant by bringing on premature labour?

80. How do the feet present?

81. If one presents, what should be done?

82. What management do knee presentations require?

83. How are breech presentations known?

84. What is their management?

85. What is the treatment requisite for presentations of the upper extremities, back, abdomen, &c.

86. What other cases require the same management?

87. When is turning required?

88. What is to be done in funis presentations?

89. What is the management for twin cases?

90. What are the symptoms of convulsions?

91. In what persons do they occur?

92. What is the treatment?

93. What is the treatment in regard to the uterus?

94. When may hæmorrhage occur?

95. What are the causes of hæmorrhage during labour?

96. Where is the placenta attached in unavoidable hæmorrhage?

97. How is it to be managed?

98. What are the causes of hæmorrhage after labour?

99. What is the general treatment?

100. How does hæmorrhage take place besides?

101. What is the general treatment for hæmorrhages?

102. What is the remedy for excessive loss of blood?

103. What is the operation of transfusion?

104. What is puerperal fever?

105. What are the symptoms?

106. What is the treatment?

107. What other remedy has been proposed?

108. What causes children to be born in a state of asphyxia?

109. What is the treatment?

A FEW

TEST OR CROSS QUESTIONS.

---

1. Why does the College order vinegar to be distilled in a *glass* vessel?

2. Why is the strongest pint of vinegar left in the retort after distillation?

3. If benzoin be composed of resin and benzoic acid only, whence the empyreumatic oil which discolours the acid?

4. In making citric acid, why do we employ *excess* of sulphuric acid?

5. In making muriatic acid, why do we put water into the receiver?

6. Why do we dilute the sulphuric acid previous to adding it to the common salt?

7. In what manner can the carbonic acid gas be exhibited, medicinally?

8. Does hot or cold water dissolve lime most readily?

9. Why do the college order lime water to be kept in stoppered bottles?

10. What is the chemical difference between calomel and corrosive sublimate?

11. In what does corrosive sublimate differ from the white precipitated mercury?

12. Why do the College order calomel to be washed with a solution of muriate of ammonia? And why do they order the washings to be tested with liquor ammoniæ?

13. In what does the red sulphuret of mercury differ from the black sulphuret?

14. Which are the best ways of procuring hydrogen gas?

15. What change does the sulphuret of potash undergo by exposure to the air?

16. Why do the College order the mistura ferri composita to be kept in stoppered bottles?

17. Does alcohol or æther contain most carbon?

18. What is the nature of the change effected upon white arsenic by heating it in a glass tube with potash and charcoal?

19. In performing the galvanic test for corrosive sublimate, how does the gold become whitened?

20. What liquid will dissolve urid acid calculi?

21. In what will the other calculi dissolve?

22. In cases of poisoning by opium, if vinegar be administered before the whole of the poison be evacuated, it only increases the patient's danger, but if given when all the poison has been rejected, it counteracts its effects. How is this to be explained?

23. Are all the sinuses of the dura mater of a triangular shape?

24. Are the inferior vena cava and sympa-

thetic nerves contained in the posterior mediastinum?

25. In the adult what arteries contain venous blood? and what veins contain arterial blood?

26. Is there any sensible difference between the arterial and venous blood of the fœtus?

27. Properly speaking, is there any abdominal viscus completely covered by peritoneum?

28. Is the peritoneum a complete sac without opening?

29. When the right auricle of the heart contracts, what prevents the blood regurgitating into the venæ cavæ?

30. Is there any direct communication between the mother and fœtus?

31. What substance would be the best to administer as an emetic in case of apoplexy and phrenitis?

32. What is the difference between pneumonia and peripneumonia?

33. To what part would you apply a blister in nephritis?

34. For what reason is the cinchona not administered during the paroxysm of an intermittent?

35. In what way do aloes occasionally prove emmenagogue? Is it by any specific effects on the uterus?

36. What acids, used medicinally, contain no oxygen?

ANSWERS

TO THE

FOREGOING TEST QUESTIONS.

---

1. If vinegar be distilled either in a pewter or copper still, it is apt to acquire a metallic impregnation; to avoid this, the College order it to be distilled in a glass retort.

2. The pint of vinegar which remains in the retort after distillation, undoubtedly contains a large portion of the acetic acid; but it also contains a great quantity of mucilage. If the distillation be carried beyond the seventh pint, the mucilage is decomposed, and gives the whole of the acid an empyreumatic flavor.

3. The empyreumatic oil which discolours the benzoic acid arises from decomposition of part of the resin.

4. However carefully the citrate of lime be washed, we cannot separate the whole of the mucilage. Excess of sulphuric acid is, therefore, used to decompose any portion of it which may be combined with the citrate.

5. The natural state of muriatic acid being a gas, water is put into the receiver to dissolve it, and thus forms liquid muriatic acid.

6. The sulphuric acid is diluted before it is added to the salt, in order to prevent the too rapid disengagement of the muriatic acid.

7. In the effervescing draught.

8. Cold water dissolves more lime than hot water.

9. If lime-water be exposed to the air it attracts carbonic acid.

10. Both calomel and corrosive sublimate are composed of chlorine and mercury; but sublimate contains a double portion of chlorine. In other words, calomel is composed of one atom chlorine and one atom mercury: corrosive sublimate, of two atoms chlorine and one atom mercury. Calomel has, therefore, been termed *chloride*, or *protochloride of mercury*, corrosive sublimate *bichloride*, *deutochloride*, or *perchloride* of mercury.

11. White precipitated mercury consists of oxide of mercury, muriatic acid, and ammonia. Corrosive sublimate consists of chlorine and mercury.

12. In the process for making calomel, there is danger of corrosive sublimate being formed. If this should be the case, a solution of muriate of ammonia removes the sublimate by rendering it very soluble.

The liquor ammoniæ indicates the presence ·he sublimate in this solution, by occasioning a white precipitate, which is, in fact, a submuriate of ammonia and mercury.

The following is the explanation of the formation of this precipitate: Upon the addition of ammonia to the solution of muriate of ammonia and mercury, it takes away a portion of the muriatic acid, reducing the triple compound to the state of a submuriate of ammonia and mercury, which is precipitated.

13. Black sulphuret of mercury is composed of one atom sulphur, and one atom mercury; the red sulphuret consists of *two* atoms sulphur, and one atom mercury. The red sulphuret has, therefore, been termed a *deuto-sulphuret of mercury*.

14. The processes for making sulphate of iron, or sulphate of zinc, are the best for making hydrogen, which in these cases flies off.

15. When sulphuret of potash is exposed to the air, it attracts oxygen, and becomes converted into a sulphate of potash.

16. When the mistura ferri composita is first made, it contains protoxide of iron, which by exposure to the air becomes peroxide.

17. Æther contains more carbon than alcohol.

18. When the white arsenic is heated with potash and charcoal, the arsenious acid unites with the potash, and forms arsenite of potash. When hot, the charcoal decomposes this, and becomes converted into carbonic acid, by combining with the oxygen of the white arsenic. The carbonic acid, thus formed, unites with the

potash, forming carbonate of potash ; while the metallic arsenic is sublimed. The use of the potash in the above process is to render the white arsenic less volatile; otherwise it would be sublimed by the heat, before the charcoal is hot enough to decompose it.

19. The effect of the galvanic circle is to decompose the sublimate. The iron combines with the muriatic acid, and the metallic mercury amalgamates with the gold, producing the white spot.

20. Uric acid calculi dissolve in a solution either of potash or soda.

21. The other varieties of urinary calculi are soluble in acids, particularly the muriatic acid.

22. It appears that if vinegar be administered before opium be evacuated from the stomach, an acetate of morphia is formed, which is the most active form of this substance ; hence, therefore, the giving vinegar in such cases will only aggravate the symptoms. But if given after the opium *has been evacuated*, vinegar counteracts the effects of the poison.

23. Most of the sinuses of the dura mater are of a triangular form ; but not all of them. As, for example, the inferior longitudinal, which is cylindrical.

24. The inferior vena cava and sympathetic nerves are undoubtedly not contained within the posterior mediastinum.

25. The pulmonary artery contains venous blood ; and the pulmonary veins, arterial blood.

26. In the fœtus there is no sensible difference between arterial and venous blood.

27. The peritoneum cannot *completely* cover any of the abdominal viscera; because in every organ there must be a space for the vessels and nerves to enter it.

28. In the male subject, the peritoneum has no opening into it; it is a complete sac. In the female, however, this is not the case; the fimbriated extremities of the Fallopian tubes perforate the peritoneum, and the mucous membrane lining the former becomes continuous with the latter. This is the only example in the body of a mucous membrane being continuous with a serous one. In consequence of this peculiarity, the water formed in ascites has, in some instances, been evacuated through the uterus and vagina.

29. When the right auricle of the heart contracts, there is no occasion for valves to guard the venæ cavæ; because the whole of the circulating blood is pressing forwards, and thus prevents any regurgitation into the veins. When, however, from any obstruction in the lungs, the auricle cannot get rid of its blood, partial regurgitation does take place, and produces what is called the venous pulse,

30. We have no evidence of there being any direct communication between the mother and the fœtus. The nourishment of the latter is effected by something similar to secretion and

absorption. The vessels of the mother secrete or deposit the blood in the cells of the placenta; the ramifications of the umbilical vein absorb the blood thus deposited.

31. In any case where there is a determination of blood to the brain, emetics are very improper, as likely to produce apoplexy. In phrenitis, therefore, they are evidently improper. In apoplexy, emetics can only increase the danger.

32. By some, the term pneumonia is understood as referring to inflammation in any of the structures within the thorax. In this sense it includes pleuritis, bronchitis, peripneumonia, pericarditis, and carditis. Dr. Cullen, however, appears to limit it to inflammation of the lungs; including pleuritis, or inflammation of the serous covering of the lungs, and *peripneumonia*, or *inflammation of the substance of the lungs.*

33. The use of blisters in nephritis is improper; when applied to the healthy subject, they are apt to induce this disease; and it would therefore be evidently improper to employ, as a remedy, a substance which is itself capable of producing the disease.

34. The subsidence of the paroxysm of an intermittent is checked by the exhibition of cinchona during the attack. If, however, this medicine be administered in the intermission, it prevents the accession of the paroxysm.

35. Aloes have no specific emmenagogue effects. They act chiefly on the colon and rectum, and by the extension of their stimulus to the uterine vessels, they, in consequence, have an emmenagogue effect.

36. Prussic and muriatic acids contain no oxygen.

Published by S. HIGHLEY, 174, *Fleet street,*
and Webb street, Maze Pond, Borough.

MEDICAL WORKS

BY JOHN STEGGALL, M.D., M.R.C.S., &c.

An Essay on Mineral, Vegetable, Animal, and Aerial Poisons, classified according to Orfila, including the general Symptoms, Treatment, Tests, and Morbid Appearances, &c.; with the means of restoring Suspended Animation; to which is appended, a Description of the Stomach Pump. With 12 plates coloured. 1829. 4s. 6d.

The Pupil's Introduction to Botany, containing the Description and Physiology of Plants, an explanation of the Classification of Linnæus and Jussieu, and a Glossary of Botanical Terms; with 8 coloured plates. 1829. Price 6s.

"The recent regulations of the College of Surgeons, and the Company of Apothecaries, demand from the student a certain extent of botanical knowledge. In this little volume he will find, in a very cheap form, every requisite elementary information upon the subject. The general reader also, who is about to enter upon botanical studies, cannot select a more effectual assistant to clear his path, than this brief, but instructive book. A list of plants in the London, Edinburgh, and Dublin Pharmacopœias, is given; and a very copious glossary of botanical terms is also appended to the volume. The plates will be found of much assistance to the pupil in botany." *London Medical and Physical Journal, March* 1829.

DR. STEGGALL

Gives INSTRUCTIONS and EXAMINATIONS to Gentlemen preparing for Examination at the Royal College of Surgeons and Apothecaries' Hall.

TERMS:

For the College, £4 4*s*.—For the Hall, £3 3*s*.

Further Particulars may be obtained by applying at his Residence, 5, Smithfield Bars.

J. AND C. ADLARD, PRINTERS,
BARTHOLOMEW CLOSE.